

THE IMPERIAL ENCYCLOPEDIA AND DICTIONARY

A LIBRARY OF UNIVERSAL
KNOWLEDGE AND AN UN-
ABRIDGED DICTIONARY OF
THE ENGLISH LANGUAGE
UNDER ONE ALPHABET

IN FORTY VOLUMES

VOLUME 37
THAN—TWITE

NEW YORK HENRY G. ALLEN & COMPANY

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SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(·) is the mark dividing words respelt phonetically into syllables; ('), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
ā...	mate, fate, fail, aye.....	māt, fāt, fāl, ā.
ă...	mat, fat.....	măt, făt.
â...	far, calm, father.....	fâr, kâm, fâ'thēr.
ä...	care, fair.....	câr, fâr.
aw...	fall, laud, law.....	faul, lawd, law.
ē...	mete, meat, feet, free.....	mēt, mêt, fêt, frē.
ě...	met, bed.....	mêt, bĕd.
ê...	her, stir, heard, cur.....	hēr, stēr, hĕrd, kĕr.
î...	pine, ply, height.....	pîn, plî, hît.
ï...	pin, nymph, ability.....	pĭn, nĭmf, ä-bĭl'î-tĭ.
ō...	note, toll, soul.....	nōt, tōl, sōl.
ö...	not, plot.....	nöt, plöt.
ô...	move, smooth.....	môv, smôth.
ö...	Goethe (similar to e in her)...	gö'tĕh.
ow...	noun, bough, cow.....	noun, bow, kow.
oy...	boy, boil.....	boy, boyl.
û...	pure, dew, few.....	pûr, dû, fû.
ÿ...	bud, come, tough.....	bŭd, kŭm, tŭf.
ü...	full, push, good.....	fûl, pûsh, gûd.
ü...	French plume, Scotch guid.....	plŭm, gŭd.
ch...	chair, match.....	châr, mäch.
ĉh...	German buch, Heidelberg, Scotch loch (guttural).....	bóĉh, hĭ'dĕl-bĕrch, löĉh.
ġ...	game, go, gun.....	gām, gō, gŭn.
ĵ...	judge, gem, gin.....	ĵŭj, ĵĕm, ĵĭn.
k...	king, cat, cot, cut.....	kĭng, kăt, kōt, kŭt.
s...	sit, scene, cell, city, cypress.....	sĭt, sĕn, sĕl, sĭt'ĭ, sĭ'prĕs.
sh...	shun, ambition.....	shŭn, äm-bĭsh'ŭn.
th...	thing, breath.....	thĭng, brĕth.
th...	though, breathe.....	thō, brĕth.
z...	zeal, maze, muse.....	zĕl, māz, mŭz.
zh...	azure, vision.....	äzh'er, vĭzh'ŭn.

ABBREVIATIONS USED IN THIS WORK.

a., or adj....adjective
A.B.....Bachelor of Arts
abbr.....abbreviation, abbreviated
abl. or abla.ablative
Abp.....Archbishop
abtabout
Acad.....Academy
acc. or ac....accusative
accom.....accommodated, accommodation
actactive
A.D.in the year of our Lord [*Anno Domini*]
Adj'tAdjutant
AdmAdmiral
adv. or ad....adverb
A.F.....Anglo-French
Ag.....Silver [*Argentum*]
agri.....agriculture
A.L.....Anglo-Latin
Al.....Aluminium
Ala.....Alabama
Alb.....Albanian
alg.....algebra
A.M.....before noon [*ante meridiem*]
A.M.Master of Arts
Am.....Amos
Amer.....America, -n
anat.....anatomy, anatomical
anc.....ancient, anciently
AN.M.in the year of the world [*Anno Mundi*]
anon.....anonymous
antiqu.....antiquity, antiquities
aoraorist, -ic
app.....appendix
appar.....apparently
Apr.....April
Ar.....Arabic
arch.....architecture
archæol....archæology
arith.....arithmetic
Ark.....Arkansas
art.....article
artil.....artillery
AS.....Anglo-Saxon
As.....Arsenic
Assoc.....Association
asst.....assistant
astrol.....astrology
astron....astronomy
attrib.....attributive
attyattorney
at. wt.....atomic weight
Au.....Gold [*Aurum*]

A.U.C.....in the year of the building of the city (Rome)[*Anno urbis conditæ*]
Aug.....August
aug.....augmentative
Aust.....Austrian
A.V.....authorized version [of Bible, 1611]
avoir.....avoirdupois
B.....Boron
B.....Britannic
b.....born
Ba.....Barium
BartBaronet
Bav.....Bavarian
bl.; bbl....barrel; barrels
B.C.....before Christ
B.C.L.... ..Bachelor of Civil Law
B.D.....Bachelor of Divinity
bef.....before
Belg.....Belgic
Beng.....Bengali
Bi.....Bismuth
biog.....biography, biographical
biol.....biology
B.L.... ..Bachelor of Laws
Bohem.....Bohemian
bot.....botany, botanical
Bp.....Bishop
Br.....Bromine
Braz.....Brazilian
Bret.....Breton
Brig.....Brigadier
Brit.....British, Britannica
bro.....brother
Bulg.....Bulgarian
bush.....bushel, bushels
C.....Carbon
c.....century
Ca.....Calcium
Cal.....California
Camb.....Cambridge
Can.....Canada
Cant.....Canterbury
cap.....capital
Capt.....Captain
Card.....Cardinal
carp.....carpentry
Cath.....Catholic
caus.....causative
cav.....cavalry
Cd.....Cadmium
Ce.....Cerium
Celt.....Celtic
cent.....central
cf.....compare [*confer*]
ch or chh...church

ABBREVIATIONS.

Chal.....	Chaldee	diff.....	different, difference
chap.....	chapter	dim.....	diminutive
chem.....	chemistry, chemical	dist	district
Chin.....	Chinese	distrib..	distributive
Chron.....	Chronicles	div.....	division
chron.....	chronology	doz.....	dozen
Cl.....	Chlorine	Dr.....	Doctor
Class.....	Classical [= Greek and Latin]	dr.....	dram, drams
Co.....	Cobalt	dram.....	dramatic
Co.....	Company	Dut. or D.....	Dutch
co.....	county	dwt.....	pennyweight
cog.....	cognate [with]	dynam or	
Col.....	Colonel	dyn.....	dynamics
Col.....	Colossians	E.....	Erbium
Coll.....	College	E. or e.....	East, -ern, -ward
colloq.....	colloquial	E. or Eng.....	English
Colo.....	Colorado	Eccl.....	Ecclesiastes
Com.....	Commodore	eccl. or.....	ecclesiastical [af-
com.....	commerce, commer-	eccles....	fairs]
	cial	ed.....	edited, edition, edi-
com.....	common		tor
comp.....	compare	e.g.....	for example [ex
comp.....	composition, com-		gratia]
	pound	E. Ind. or.....	East Indies, East
compar.....	comparative	E. I.....	Indian
conch.....	conchology	elect.....	electricity
cong.....	Congress	Emp.....	Emperor
Congl.....	Congregational	Encyc.....	Encyclopedia
conj.....	conjunction	Eng. or E.....	English
Conn or Ct.....	Connecticut	engin.....	engineering
contr.....	contraction, con-	entom.....	entomology
	tracted	env. ext.....	envoy extraordinary
Cop.....	Coptic	ep.....	epistle
Cor.....	Corinthians	Eph.....	Ephesians
Corn.....	Cornish	Episc.....	Epi-copal
corr.....	corresponding	eq. or =.....	equal, equals
Cr.....	Chromium	equiv.....	equivalent
crystal.....	crystallography	esp.....	especially
Cs.....	Cæsium	Est.....	Esther
ct.....	cent	estab.....	established
Ct. or Conn.....	Connecticut	Esthon.....	Esthonian
Cu.....	Copper [<i>Cuprum</i>]	etc.....	and others like [et
cwt.....	a hundred weight		cetera]
Cyc.....	Cyclopedia	Eth.....	Ethiopic
D.....	Didymium	ethnog.....	ethnography
D. or Dut.....	Dutch	ethnol.....	ethnology
d.....	died	et seq.....	and the following
d. [l. s. d.].....	penny, pence		[et sequentia]
Dan.....	Daniel	etym.....	etymology
Dan.....	Danish	Eur.....	European
dat.....	dative	Ex.....	Exodus
dau.....	daughter	exclam.....	exclamation
D. C.....	District of Columbia	Ezek.....	Ezekiel
D. C. L.....	Doctor of Civil [or	Ezr.....	Ezra
	Common] Law	F.....	Fluorine
D. D.....	Doctor of Divinity	F. or Fahr.....	Fahrenheit
Dec.....	December	f. or fem.....	feminine
dec.....	declension	F. or Fr.....	French
def.....	definite, definition	fa.....	father
deg.....	degree, degrees	Fahr. or F.....	Fahrenheit
Del.....	Delaware	far.....	farriery
del.....	delegate, delegates	Fe.....	Iron [<i>Ferrum</i>]
dem.....	democratic	Feb.....	February
dep.....	deputy	fem or f.....	feminine
dep.....	deponent	fig.....	figure, figuratively
dept.....	department	Fin.....	Finnish
deriv.....	derivation, deriva-	F.—L.....	French from Latin
	tive	Fla.....	Florida
Deut.....	Deuteronomy	Flem.....	Flemish
dial.....	dialect, dialectal	for.....	foreign
diam.....	diameter	fort.....	fortification
Dic.....	Dictionary	Fr. or F.....	French
		fr.....	from

ABBREVIATIONS.

freq.....frequentative
 FrisFrisian
 ft.....foot, feet
 fut.....future
 G. or Ger...German
 G.....Glucinium
 Ga.....Gallium
 GaGeorgia
 GaelGaelic
 GalGalatians
 galgallon
 galv.....galvanism, galvanic
 gard.....gardening
 gen.....gender
 Gen.....General
 GenGenesis
 gen.....genitive
 Geno.....Genoese
 geoggeography
 geol.....geology
 geom.....geometry
 Ger.....German, Germany
 Goth.....Gothic
 Gov.....Governor
 govt.....government
 GrGrand, Great
 GrGreek
 gr.....grain, grains
 gramgrammar
 Gr. Brit....Great Britain
 Gris.....Grisons
 gungunnery
 HHegira
 H.....Hydrogen
 h.....hour, hours
 Hab.....Habakkuk
 HagHaggai
 H. B. M....His [or Her] Britan-
 nic Majesty
 Heb.....Hebrew, Hebrews
 her.....heraldry
 herpet.....herpetology
 Hg.....Mercury [*Hydrar-
 gyrum*]
 hhd.....hogshead, hogsheads
 Hind.....Hindustani, Hindu,
 or Hindi
 hist.....history, historical
 HonHonorable
 hort.....horticulture
 HosHosea
 Hung.....Hungarian
 Hydros....Hydrostatics
 IIodine
 I.; Is.....Island ; Islands
 Icel.....Icelandic
 ichthichthyology
 Ida.....Idaho
 i.e.....that is [*id est*]
 Ill.....Illinois
 illus.....illustration
 impera or
 impr.....imperative
 impers.....impersonal
 impfor imp.imperfect
 impf. p. or
 impimperfect participle
 improp.....improperly
 In.....Indium
 in.....inch, inches
 incept.....inceptive
 IndIndia, Indian
 IndIndiana

ind.....indicative
 indefindefinite
 Indo-Eur...Indo-European
 inf.....infantry
 inf or infin.infinite
 instr.....instrument, -al
 int.....interest
 intens.....intensive
 interj. or
 int.....interjection
 interrog...interrogative pro-
 noun
 intr. or
 intrans...intransitive
 Io.....Iowa
 Ir.....Iridium
 Ir.....Irish
 Iran.....Iranian
 irrirregular, -ly
 Is.....Isaiah
 ItItalian
 Jan.....January
 Jap.....Japanese
 Jas.....James
 Jer.....Jeremiah
 Ju.....John
 Josh.....Joshua
 Jr.....Junior
 JudgJudges
 K.....Potassium [*Kalium*]
 K.....Kings [in Bible]
 K.....king
 Kan.....Kansas
 Kt.....Knight
 Ky.....Kentucky
 L.....Latin
 L.....Lithium
 l. [l. s. d.], } pound, pounds
 or £.....} [sterling]
 La.....Lanthanum
 La.....Louisiana
 Lam.....Lamentations
 Lang.....Languedoc
 lang... ..language
 Lap.....Lapland
 latlatitude
 lb.; llb. or } pound ; pounds
 lbs.....} [weight]
 Let.....Lettish
 Lev.Leviticus
 LG.....Low German
 L.H.D.....Doctor of Polite Lit-
 erature
 Lieut.....Lieutenant
 LimLimousin
 LinLinnaeus, Linnæan
 litliteral, -ly
 lit.....literature
 Lith..Lithuanian
 lithog.....lithograph, -y
 LL.....Late Latin, Low
 Latin
 LL.D.....Doctor of Laws
 long.....longitude
 Luth.....Lutheran
 M.....Middle
 M..Monsieur
 m.....mile, miles
 m. or masc.masculine
 M.A.....Master of Arts
 Macc. . . .Maccabees
 mach... ..machinery
 Mag.....Magazine

ABBREVIATIONS.

Maj.....Major	N. A., or
Mal.....Malachi	N. Amer.North America, -n
Mal.....Malay, Malayan	natnatural
manuf.....manufacturing, manufacturers	naut.....nautical
Mar.....March	nav.....navigation, naval af- fairs
masc or m.masculine	Nb.....Niobium
MassMassachusetts	N. C. or
mathmathematics, math- ematical	N. Car...North Carolina
Matt.....Matthew	N. D.North Dakota
M.D.....Doctor of Medicine	NebNebraska
MD.....Middle Dutch	neg.....negative
MdMaryland	NehNehemiah
ME.....Middle English, or Old English	N. Eng....New England
MeMaine	neut or n..neuter
mech.....mechanics, mechan- cal	NevNevada
med.....medicine, medical	N.Gr.New Greek, Modern Greek
mem.....member	N. H.New Hampshire
mensur....mensuration	NHG.....New High German [German]
Messrs. or	NiNickel
MMGentlemen, Sirs	N. J.New Jersey
metal.....metallurgy	NLNew Latin, Modern Latin
metaph....metaphysics, meta- physical	N. Mex. ...New Mexico
meteor....meteorology	N. T.. or
Meth.....Methodist	N. Test...New Testament
Mex.....Mexican	N. Y..New York [State]
MgMagnesium	nomnominative
M.GrMiddle Greek	Norm. F ..Norman French
MHG.....Middle High Ger- man	North. E ..Northern English
Mic.....Micah	Norw... ..Norwegian, Norse
MichMichigan	NovNovember
mid.....middle [voice]	Num.....Numbers
Milan.....Milanese	numisnumismatics
mid. L. or } Middle Latin, Me- ML..... } diæval Latin	O.....Ohio
milit. or	O.....Old
mil.... ..military [affairs]	O.....Oxygen
minminute, minutes	ObadObadiah
mineral....mineralogy	objobjective
Minn.....Minnesota	obs. or †...obsolete
Min. Plen..Minister Plenipoten- tiary	obsoles ..obsolescent
MissMississippi	O.Bulg....Old Bulgarian or Old Slavic
ML. or } Middle Latin, Me- mid. L... } diæval Latin	Oct.....October
MLG.....Middle Low German.	Odontog...odontography
Mlle.....Mademoiselle	OEOld English
MmeMadam	OF or
Mn.....Manganese	O. Fr....Old French
Mo.....Missouri	OHG.....Old High German
Mo.....Molybdenum	Ont.....Ontario
mod.....modern	optoptics, optical
MontMontana	Or.....Oregon
Mr.....Master [Mister]	ordorder
Mrs.....Mistress [Missis]	ord.... ..ordnance
MS.; MSS..manuscript; manu- scripts	org.....organic
Mt.....Mount, mountain	origoriginal, -ly
musmusic	ornith.....ornithology
MUS.DOC...Doctor of Music	Os.....Osmium
mythmythology, mytho- logical	OS.Old Saxon
N.....Nitrogen	O. T., or
N. or n....North, -ern, -ward	O. Test...Old Testament
nnoun	Oxf.....Oxford
n or neut...neuter	oz.....ounce, ounces
NaSodium [Natrium]	P.....Phosphorus
Nah.....Nahum	p.; pp.....page; pages
	p., or part..participle
	Pa. or Penn.Pennsylvania
	paintpainting
	palæon....palæontology
	parlparliament
	passpassive

ABBREVIATIONS.

pathol or
 path.....pathology
 Pb.....Lead [*Plumbum*]
 PdPalladium
 Penn or Pa. Pennsylvania
 perf.....perfect
 perh.perhaps
 Pers.....Persian, Persic
 pers.....person
 persp.....perspective
 pert.....pertaining [to]
 Pet.....Peter
 Pg. or Port. Portuguese
 phar.....pharmacy
 PH.DDoctor of Philoso-
 phy
 Phen.....Phenician
 Phil.....Philippians
 Philem.....Philemon
 philol.....philology, philologi-
 cal
 philos. { philosophy, philo-
 or phil... } sophical
 phonog....phonography
 photog....photography
 phren.....phrenology
 phys.....physics, physical
 physiol....physiology, physi-
 ological
 PiedPiedmontese
 PlPlate
 pl. or plu...plural
 Pl. D.....Platt Deutsch
 plupf.....pluperfect
 P.M.....afternoon [*post meri-
 diem*]
 pneum.....pneumatics
 P. O.....Post-office
 poet.....poetical
 Pol.....Polish
 pol. econ...political economy
 polit.....politics, political
 pop... ..population
 Port. or Pg. Portuguese
 poss.....possessive
 pp.....pages
 pp.....past participle, per-
 fect participle
 p. pr.....present participle
 Pr. or Prov. Provençal
 pref.....prefix
 prep.....preposition
 Pres.....President
 pres.....present
 Presb.....Presbyterian
 pret.....preterit
 prim.....primitive
 priv.....privative
 prob.....probably, probable
 ProfProfessor
 pron.....pronoun
 pron.....pronunciation, pro-
 nounced
 prop.....properly
 pros.....prosody
 Prot.Protestant
 Prov. or Pr. Provençal
 Prov.....Proverbs
 prov.....province, provincial
 Prov. Eng. Provincial English
 Prus.....Prussia, -n
 Ps.....Psalm, Psalms
 psychol....psychology

pt.....past tense
 pt.....pint
 Pt.....Platinum
 pub.....published, publisher,
 publication
 pwt.....pennyweight
 Q.....Quebec
 qt.....quart
 qtr.quarter [weight]
 qu.....query
 q.v.....which see [*quod*
 vide]
 R.....Rhodium
 R.....River
 Rb.....Rubidium
 R. Cath....Roman Catholic
 rec. sec....recording secretary
 Ref.....Reformed
 refl.....reflex
 reg.....regular, -ly
 regt.....regiment
 rel. pro. or
 rel.....relative pronoun
 reprrepresenting
 repub.....republican
 Rev... ..Revelation
 Rev.The Reverend
 Rev. V.....Revised Version
 rhet.....rhetoric, -al
 R. I.....Rhode Island
 R. N.....Royal Navy
 RomRoman, Romans
 Rom.....Romanic or Ro-
 mance
 Rom. Cath. { Roman Catholic
 Ch. or R. } Church
 C. Ch.... }
 r.r.....railroad
 Rt. Rev ...Right Reverend
 RuRuthenium
 Russ.....Russian
 r.w.....railway
 S.....Saxon
 S.....Sulphur
 s.....second, seconds
 s. [l. s. d.]..shilling, shillings
 S. or s.....South, -ern, -ward
 S. A. or
 S. Amer..South America, -n
 Sam.....Samaritan
 Sam.....Samuel
 Sans, or
 Skr.....Sanskrit
 Sb.....Antimony [*Stibium*]
 s.c.....understand, supply,
 namely [*scilicet*]
 S. C. or
 S. Car....South Carolina
 Scand.....Scandinavian
 Scot.....Scotland, Scotch
 scr.....scruple, scruples
 Scrip.....Scripture [s], Scrip-
 tural
 sculp.....sculpture
 S. D.....South Dakota
 Se.....Selenium
 sec.secretary
 sec.....section
 Sem.....Semitic
 Sep.....September
 Serv.....Servian
 Shaks.....Shakespeare
 Si.....Silicon

ABBREVIATIONS.

Sic.....	Sicilian	trigon.....	trigonometry
sing.....	singular	Turk.....	Turkish
sis.....	sister	typog.....	typography, typographical
Skr. or		U.....	Uranium
Sans....	Sanskrit	ult.....	ultimate, -ly
Slav.....	Slavonic, Slavic	Unit.....	Unitarian
Sn.....	Tin [<i>Stannum</i>]	Univ.....	Universalist
Soc.....	Society	Univ.....	University
Song Sol..	Song of Solomon	U. Presb...	United Presbyterian
Sp.....	Spanish	U. S....	United States
sp. gr.....	specific gravity	U. S. A....	United States Army
sq.....	square	U. S. N....	United States Navy
Sr.....	Senior	Ut.....	Utah
Sr.....	Strontium	V.....	Vanadium
....	Saint	v.....	verb
....	street	Va.....	Virginia
stat.....	statute	var.....	variant [word]
S.T.D.....	Doctor of Sacred Theology	var.....	variety of [species]
subj.....	subjunctive	Ven.....	Venerable
suf.....	suffix	Venet.....	Venetian
Su. Goth...	Suo-Gothic	vet....	veterinary
superl....	superlative	v. i. or	
Supp.....	Supplement	v. intr....	verb intransitive
Supt.....	Superintendent	vil.....	village
surg.....	surgery, surgical	viz.....	namely, to-wit [<i>vide-licet</i>]
Surv.....	surveying	v. n.....	verb neuter
Sw.....	Swedish	voc.....	vocative
Swab.....	Swabian	vol.....	volume
sym.....	symbol	vols.....	volunteers
syn.....	synonym, -y	Vt.....	Vermont
Syr.....	Syriac, Syrian	v. tr.....	verb transitive
t.....	town	W.....	Tungsten [<i>Wolfram</i>]
Ta....	Tantalum	W.....	Welsh
Tart.....	Tartar	W. or w....	West, -ern, -ward
Te.....	Tellurium	Wal.....	Walachian
technol...	technology	Wall.....	Walloon
teleg.....	telegraphy	Wash.....	Washington
Tenn.....	Tennessee	Westph....	Westphalia, -n
term.....	termination	W. Ind. }	West Indies, West or W. I.. }
terr.....	territory	Indian	
Teut.....	Teutonic	Wis.....	Wisconsin
Tex.....	Texas	wt.....	weight
Th.....	Thorium	W. Va.....	West Virginia
theat.....	theatrical	Wyo.....	Wyoming
theol.....	theology, theological	Y.....	Yttrium
therap....	therapeutics	yd.....	yard
Thess.....	Thessalonians	yr.....	year
Ti.....	Titanium	Zech.....	Zechariah
Tim.....	Timothy	Zeph.....	Zephaniah
Tit.....	Titus	Zn.....	Zinc
Tl.....	Thallium	zool.....	zoology, zoological
toxicol...	toxicology	Zr.....	Zirconium
tp.....	township		
tr. or trans.	transitive		
transl.....	translation, trans. lated		

See also ABBREVIATIONS in Vol. I.

IMPERIAL ENCYCLOPEDIA AND DICTIONARY.

THAN, conj. *thān* [AS. *thonne*, than: Dut. *dan*, than, then: another form of *then*]: a particle used after the comparative degree and words expressing comparison or diversity, such as *other*, *otherwise*; and followed by the object compared. *Than* has the same case after it that it has before it: as, *he is taller than I* (am).

THANATICAL, *tha-nāt'ī-sī* [from Gr. *thanatos*, death]: technical term sometimes used to indicate lesions from violence tending to sudden death.

THANE, n. *thān* [AS. *thegen*, a thane: Icel. *thegn*, a brave man, a warrior: OHG. *degan*, a male, a soldier. Ger. *degen*, a warrior]: in *OE. hist.*, a member of the king's body-guard who on completion of his term of service received a grant of land: in *Scot.*, a hereditary tenant who paid the sum at which the lands were valued in the king's rental (see below). **THANAGE**, n. *thān'āj*, lands or dignity of a thane; district in which a thane presided. **THANE'DOM**, n. *-dūm*, district or jurisdiction of a thane. **THANE'SHIP**, n. *-shīp*, state or dignity of a thane; the property. **THANE-LANDS**, possessions granted to thanes.—*Thane* is a title whose use in the early feudal ages has been much discussed. In England, in Saxon times, the king's T. was a 'miles emeritus,' who, on the cessation of his actual service about the king's person, received a benefice or grant of land. The term 'miles,' when used by Bede, is uniformly rendered 'cyninges thegn' by his Saxon translator. In the 10th c., all who would, in the feudal era, have been known as tenants *in capite*, were thanes. After the Conquest, thanes and barons are classed together; and in Henry I.'s time the terms seem to be used synonymously. The office or dignity appears to have been attached to particular estates; T. lands are frequently mentioned in Domesday. After the reign of Henry II., the term fell into disuse. The title T. was introduced at a later period into n. Scotland, but not expressing the same rank as in England; the tenure not being military, but in fee-farm.—The Scottish T. seems to have been a hereditary tenant, paying the sum at which the land stood in the king's rental, and retaining his ancient authority strengthened and legalized. The title was in occasional use in Scotland till the end of the 15th c. Hector Boece's notion of the Scottish thanes being all made earls, adopted in Shakespeare's *Macbeth*, has no historical foundation.

THANET—THANKSGIVING DAY.

THANET, *thăn'ět*, ISLE OF: the n.e. corner of the county of Kent (q. v.), England, separated from the mainland by the river Stour and its branches; bounded n. and e. by the sea. It is 10 m. in length, 4 to 8 m. broad; 26,500 acres; of which 23,000 are arable. The surface is high but, in the main, level; the soil is in general light and chalky; the island, however, is rich and fruitful. On the shores are the well-known watering-places, Ramsgate, Margate, and Broadstairs; and on the North Foreland, in the n.e., there is a light-house, 340 ft. above sea-level, and visible 22 m.—Pop. (1881) 50,646 : (1891) 57,600.

The Isle of T., the old British name of which was *Ruim* (a headland), was formerly separated from the mainland by a sea-passage, called the Wantsome, which in Bede's time was one-third of a mile wide, and was passable only at Sarre and Wade. The Wantsome was the general sea-passage toward London for Danish ships, but in 1500 it became finally closed.

THANK, v. *thǎngk* [Goth. *thagkjan*; Ger. *denken*, to think: AS. *thanc*, thought, thanks: Goth. *thagks*, thanks: comp. Gael. *taing*, gratitude, thanks: closely allied to **THINK**]; to express one's gratitude for a favor or for a kindness—often used in a contrary and ironical sense. **THANKS**, n. plu. expression of gratitude for a favor or a kindness; often used familiarly instead of *thank you*. **THANK'ING**, imp. **THANKED**, pp. *thǎngkt*. **THANKFUL**, a. *thǎngk'fûl*, grateful; impressed with a sense of kindness received. **THANKFULLY**, ad. *-lǐ*. **THANK'FULNESS**, n. *-nēs*, state of being thankful; gratitude. **THANK'LESS**, a. *-lēś*, ungrateful; unthankful. **THANK'LESSLY**, ad. *-lǐ*. **THANK'LESSNESS**, n. *-nēs*, the state of being thankless; ingratitude. **THANKS'GIVER**, n. one who gives thanks in acknowledgment of goodness or kindness. **THANKS'GIVING**, n. [*thanks* and *giving*]; the act of rendering thanks, or of expressing gratitude, for favors or mercies; a public celebration of divine goodness: ADJ. applied to a day set apart for religious services in acknowledgment of the divine goodness. **THANK-OFFERING**; or **THANKS-OFFERING**, an offering made, or gift bestowed, in acknowledgment of the divine goodness. **THANK'WORTHY**, a. deserving thanks; meritorious. **THANK'WORTHINESS**, n. the state of being thankworthy.

THANKS'GIVING DAY: religious and social festival, observed annually in the United States, on appointment by the president and by state governors. On extraordinary occasions such a day has been appointed in other countries, and such was its origin in this country, as after the first harvest in the Plymouth colony (1621), when Gov. Bradford sent out men to get wild fowl to help the feast; also in gratitude for rain after drouth 1623, and for supplies of sorely-needed food received by ship 1632—all in the same colony; on later occasions, the form of proclamation in 1680 indicated that the feast had become an annual observance. From the documentary history of the second and successful colony of Mass. Bay, it seems that such a day was annual with little interruption from 1632, three years after the settlement. In the New Netherlands (New York) a

THANN—THAT.

feast of the kind is on record repeatedly from the sixth year of Gov. Kieft, 1644, to the last year of Gov. Stuyvesant, 1664; and under the English governors in 1755 and 60. It was recommended annually by congress during the revolution; but there was an intermission after that, perhaps due to a prevalence of deism and skepticism, until 1789, when Pres. Washington appointed a day of thanksgiving for the adoption of the federal constitution. Subsequently various days in Nov. were recommended by presidents and governors until, in the third year of the civil war, under Pres. Lincoln, the regular observance of a national thanksgiving began; the proclamation by the president being supplemented generally by governors of states, and fixing by custom the last Thursday in Nov. as the day. The absence of calendar church festivals among most of the Prot. communions has favored the day, which has been observed especially by New England independent churches, and which was formerly, if not now, depreciated correspondingly by those who respect church days. As a family gathering and harvest festival, the custom is endeared to multitudes especially. But the religious observance has deplorably fallen into disregard, except as the day has been made an occasion for the minister to speak his mind on political and other secular topics. Neighboring churches now often unite in holding the service.

THANN, *tân*: town of Germany, province of Alsace-Lorraine, at the foot of a hill crowned by the ruins of the castle of Engelburg, 13 m. w.n.w. of Mulhouse. It contains a superb Gothic church, surmounted by a spire of delicate open-work, more than 300 ft. high. Cotton cloths, chemicals, and machinery are manufactured.—Pop. (1875) 7,532; (1880) 7,535; (1890) 7,425.

THARMS: see **THERMS**.

THASOS, *thá'sos*: most northerly island in the Ægean Sea, a few miles off the coast of Macedonia; circumference about 40 m. T. is mountainous, and, on the whole, barren, and overspread with wild wood. It exports oil, honey, and timber. In ancient times the island was famous for its gold mines, which appear to have been worked from a very remote antiquity.—Pop. about 5,000.

THAT, a. and pron. *thăt*, plu. **THOSE**, *thōz* [AS. *thæt*, the, that; Goth. *thata*, that; Skr. *tat*, it, that]: not this, but the other; the more distant thing in space or time, being thus opposed to *this*—*this* denoting the nearer, and *that* the more distant of the two objects; pointing to some person or thing mentioned before: the word is used also absolutely or without a noun, as, can you stand *that*? and in certain cases as REL. PRON. instead of *who*, *which*, and *whom*: in this use *that* is never preceded by a preposition, which, however, may be placed at the end of the clause—e.g., 'the man of *whom* I spoke' would with *that* be 'the man *that* I spoke of': CONJ. introduces a reason, object, the final end, or purpose; because. **TO THE END THAT**. **IN ORDER THAT**, conjunctive phrases, introducing a reason or purpose, sometimes a result. **IN THAT**, for the reason that; because.

THATCH—THAW.

THATCH, n. *thăch* [AS. *thæc*, thatch; *theccan*, to cover, to conceal: Dan. *tække*, to cover: Dut. *duk*, a roof: Gael. *teach* and *tigh*, a house, a home: L. *tectum*, a roof; *tegĕrĕ*, to cover]: a roof or covering of straw or some similar substance, small sheaves of which are laid side by side so as to shed the rain, and fastened down with pins and ropes: V. to cover or roof with straw, reeds, or similar substances. **THATCH'ING**, imp.: N. the act of covering buildings with thatch; materials such as straw or reeds used for covering buildings. **THATCHED**, pp. *thăcht*: **ADJ.** covered with thatch. **THATCH'ER**, n. *-ĕr*, one who thatches houses.

THATCHER, *thăch'ĕr*, **HENRY KNOX**: 1806, May 26—1880, Apr. 5; b. Thomaston, Me.: naval officer. He entered the U. S. navy as midshipman 1823; was promoted lieut. 1833, commander 1855, commodore 1862, and rear-admiral 1866; and was retired 1868, May 26. Returning from the Mediterranean station 1863, July, he commanded the 1st div. of Com. Porter's fleet in both attacks on Fort Fisher; and soon afterward succeeded Admiral Farragut as commander of the w. Gulf squadron at Mobile. He there co-operated effectively with the army under Gen. Canby, bombarded Fort Alexis and Spanish Fort prior to their successful storming by the army, and thus aided in forcing the surrender of Mobile and of the Confederate fleet, which he pursued up the Tombigbee river. After his retirement he was port-admiral at Portsmouth, N. H.

THATCH-WOOD WORK: in *hydr. engin.*, mode of facing sea-walls with brushwood. Underbrush of from 12 or 14 years' growth is cut down, fagoted at its full length, and spread over the face of the banks. It is kept down by strong stakes, which have cross-pins at their upper ends to rest on the brush, which breaks and disperses the waves and protects the earth beneath.

THAU: see **AMBOYNA**.

THAUMATROPE, n. *thaw'mă-trōp* [Gr. *thauma*, a wonder; *trepō*, I turn]: optical instrument or toy for showing the persistence of an impression on the eye after the luminous object has been withdrawn: see **STEREOSCOPE**: **ZOETROPE**.

THAUMATURGY, n. *thaw'mă-tĕr'jĭ* [Gr. *thauma*, a wonder; *thaumata*, wonders; *ergon*, a work]: the performing of wonders; magic. **THAU'MATUR'GIC**, a. *-jĭk*, or **THAU'MATUR'GICAL**, a. *-jĭ-kăl*, exciting wonder; wonder-working. **THAU'MATUR'GIST**, n. *-jĭst*, one who works wonders; one who deals or believes in wonders. **THAU'MATUR'GUS**, n. *-gŭs*, a wonder-worker; a miracle-worker.

THAW, n. *thaw* [Dut. *dooi*, thaw: Ger. *thauen*, to thaw: OHG. *dawjan*; Ger. *verdauen*, to digest: W. *tawdd*, melting, dripping: Icel. *thida*, to thaw]: the melting of ice or snow by a change of temperature; the change of weather that causes it: V. to melt or reduce to a liquid state, as ice or snow; to become sufficiently warm to melt ice or snow, as the weather. **THAW'ING**, imp.: **ADJ.** dissolving; melting. **THAWED**, pp. *thawd*. **THAWY**, a. *thaw'ĭ*, growing liquid; inclined to thaw,

THAXTER—THAYER.

THAXTER, *thäks'tér*, **CELIA** (**LEIGHTON**): poet: b. Portsmouth, N. H., 1836, June 29. She has spent the most of her life at Appledore, Isles of Shoals, whither her family removed when she was a child, and where she was married to Levi L. T., 1851. Her publications include: *Among the Isles of Shoals* (Boston 1873); *Poems* (1874); *Driftweed* (1878); *Poems for Children* (1884); and *The Cruise of the Mystery, and Other Poems*. D. 1894 Aug. 26.

THAYER, *thär*, **ELI**: educator: b. Mendon, Mass., 1819, June 11. He graduated at Brown Univ. 1845; became principal of Worcester Acad., and 1848 founded at Worcester the collegiate school for young ladies. While representative in the state legislature 1853-4, he organized the Emigrant Aid Company to settle the new state of Kansas with anti-slavery colonists, and labored with ardent zeal for the free-state cause till 1857, when he was elected to congress from Mass., serving two terms. T.'s work in Kansas was of far-reaching effect on the anti-slavery struggle and on its great national issue.—T. invented a hydraulic elevator, a sectional safety steam-boiler, an automatic boiler-cleaner, etc. He died 1899, Apr. 15.

THAYER, **JOSEPH HENRY**: Greek scholar: b. Boston, 1828, Nov. 7. He graduated at Harvard 1850 and Andover Theol. Seminary 1857, was pastor of a Congl. church in Salem 1859-64, prof. of sacred lit. in Andover Theol. Seminary 1864-84, and afterward became prof. of New Test. criticism and interpretation in Harv. Div. School and also sec. of the Amer. committee on Bible revision. He served a year as chaplain in the civil war. Besides many occasional papers, he translated and edited Winer's *Grammar of the Idioms of the N. Test.* (1869); Buttman's *Grammar of N. Test. Greek*; Grimm's *Wilke's Greek-English Lexicon of the N. Test.*; edited Abbot's *Notes on Scrivener's Plain Introduction to the Criticism of the N. Test.*; and contributed to the Amer. ed. of Smith's Bible Dictionary. He died 1901, Nov. 26.

THAYER, **SIMEON**: 1737, Apr. 30—1800, Oct. 14; b. Mendon, Mass.: milit. officer. In early life he removed to R. I., with whose troops he served in the French war 1756, and with Robert Rogers's rangers afterward, and was taken prisoner at Fort William Henry 1757. He was a capt. in Arnold's expedition to Quebec, where he was again taken prisoner; was promoted maj. 1777; distinguished himself in the defense of Red Bank and at Fort Mifflin, for which the R. I. legislature gave him a sword; was wounded at Monmouth 1778; and was retired 1781. He prepared a *Journal of the Invasion of Canada in 1775*.

THAYER, **SYLVANUS**, LL.D.: 1785, June 9—1872, Sep. 7; b. Braintree, Mass.: milit. officer. He graduated at Dartmouth College 1807 and at the U. S. Milit. Acad. 1808, entered the engineer corps of the U. S. army; was promoted 1st lieutenant 1812; chief engineer on the Niagara frontier under Gen. Dearborn 1812-3, and on Lake Champlain 1813; promoted capt. 1813; engineer in the defense of Norfolk 1814; and promoted maj. 1815. He was supt. of

THE—THEATINES.

the U. S. Milit. Acad. 1817-33; engineer in charge of construction of defenses in and about Boston harbor 1838-68; and was retired with rank of brevet brig.gen. 1863, June 1. He bequeathed \$300,000 to endow an acad., and \$32,000 to found a public library in Braintree, and \$70,000 to establish a school of architecture and civil engineering at Dartmouth College.

THE, a. *thě* or *thē* [AS. *se* or *the*; Dut. *de*; Ger. *der*, *the*]: a word placed before nouns, or nouns preceded by adjectives, to point them out and limit their signification; usually called the *definite article*, but is really a demonstrative adjective, and only a softened form of *that*; used before adjectives in the comparative and superlative degrees.

THE'A: genus to which the tea-plant belongs: see TEA.

THEANDRIC, a. *thē-ăn'drĭk* [Gr. *theandrikos*—from *theos*, God; *anēr*, *andros*, a man]: relating to or existing by the joint agency of the divine and human natures in Jesus Christ. THEANTHROP'IC, a., or THEANTHROP'ICAL, a. [Gr. *theos*, God; *anthrōpos*, a man]: partaking of both the divine and the human nature. THEAN'THROPISM, n. state of being both God and man. In general, a conception of God or of gods as possessing qualities essentially the same as those of men, but on a grander scale. THEAN'THROPIST, n. one who advocates or believes in Theanthropism.

THEATINES, *thě'a-tĭnz*: one of the more modern religious brotherhoods of the Rom. Cath. Church, which took an important part in the movement in central and southern Italy for reformation toward the middle of the 16th c., described in Ranke's *History of the Popes*. The founders of the assoc. of T. were a party of friends: Cajetan di Thiene; John Peter Caraffa, at that time bp. of *Theate* (whence the name T.); Paul Consiglieri; and Bonifazio di Colle. They resigned all their preferments, and obtained a brief of Pope Clement, 1524, formally constituting the new brotherhood, with the three usual vows, and with the privilege of electing their superior, to hold office for three years. Their vow of poverty had the peculiarity that they were forbidden to possess property, and were to subsist entirely on the alms of the faithful; and yet were strictly forbidden in any way to solicit charitable contributions. Their first convent was opened in Rome, and F. Caraffa was chosen as the first superior: he was succeeded 1527 by Cajetan, and the Congregation began to extend to the provinces. After a time it was thought advisable to unite it with the analogous order of the Somaschans; but this union did not continue; Caraffa, who was elected pope, under the name Paul IV., having restored the original constitution 1555. By degrees, the T. extended themselves, first over Italy, afterward into Spain, Poland, and Germany, especially Bavaria. They did not find entrance into France till the following century, when a house was founded in Paris under Cardinal Mazarin 1644. To their activity, devotedness, and zeal, Ranke ascribes much of the success of the remarkable reaction against Protestantism in the latter half of the 16th c. At present the Theatine order is confined to Italy and Sicily.

THEATRE.

THEATRE, or **THEATER**, n. *thě'ă-tēr* [F. *théâtre*—from L. *thēātrum*; Gr. *thēātron*, a theatre—from Gr. *thēāōmai*, I see; *thea*, a view]: a building in which to exhibit dramatic performances or shows; a play-house; a building or room with a platform at one end, and rows of seats rising up gradually like the seats of an ancient theatre, one behind the other; large apartment suitably arranged for lectures, anatomical demonstrations, etc.; any field or place of action or exhibition, as the *theatre* of war. **THE-ATRIC**, a. *thē-ăt'rik*, or **THEAT'RICAL**, a. *-rĭ-kăl*, pert. to a theatre or dramatic representation; resembling the manner of dramatic performers; pompous; calculated for display; artificial. **THEAT'RICALY**, ad. *-lĭ*. **THEAT'RICALS**, n. plu. *-kălz*, dramatic performances.—A *Theatre* is a place for public representations, chiefly dramatic or musical. Theatres are of very ancient origin. They were found in every Greek city, both at home and in the colonies, and many interesting specimens of the Greek theatres still remain in good preservation. These were not like modern theatres, with tiers of galleries rising one over the other, but were built with concentric rows of seats rising in regular succession one behind and above another like steps. These seats were frequently cut in the solid rock; and a place where the natural curve and slope of the ground rendered such excavation easy was generally chosen. The seats, or audience department, were arranged in semi-circular form. In the centre, at the lowest point, stood the orchestra; and the proscenium, or place for the dramatic representation, formed the chord of the semicircular auditorium. Behind this was the *scena*, closing in the building with a solid wall, generally ornamented with pillars, cornices, etc. There was no roof, but the audience was probably protected from the sun's rays by a curtain stretching across the theatre. This form of T. was also that adopted by the Romans, who built or excavated large theatres in many of their important towns. The theatres of the Romans differed from their *Amphitheatres* (q.v.), the former being semicircular, the latter oval, with seats all round. Of the theatres still remaining, that of Orange, in s. France, is one of the finest, the auditorium being 340 ft. in diameter. The illustration (fig. 1) shows the general form of these ancient theatres; and in this case the *scena* is more elaborate than usual. During the middle ages, theatres were unnecessary, and were never built. The few dramatic performances then in use, chiefly of the nature of sacred mysteries, were represented in the cathedrals (see **MYSTERIES AND MIRACLE PLAYS**). From the remains still visible, however, there seem to have been large open-air theatres at an early age in Britain. Of these, Piran Round in Cornwall is the best example: it is circular, with raised platforms all round for spectators, after the manner of the Greek theatres. With the revival of classical literature in the 16th c., the classical drama also was reproduced, and naturally with it the classical form of T. The first specimens of what may be called modern theatres (though founded on the old Greek model, according to Vitruvius's

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description) were the Theatro Olympico, erected by Palladio in Vicenza; a similar one in Venice, also by Palladio; and another in Vicenza, by Serlio. In Italy and Spain, open court-yards, with galleries round them, were at first

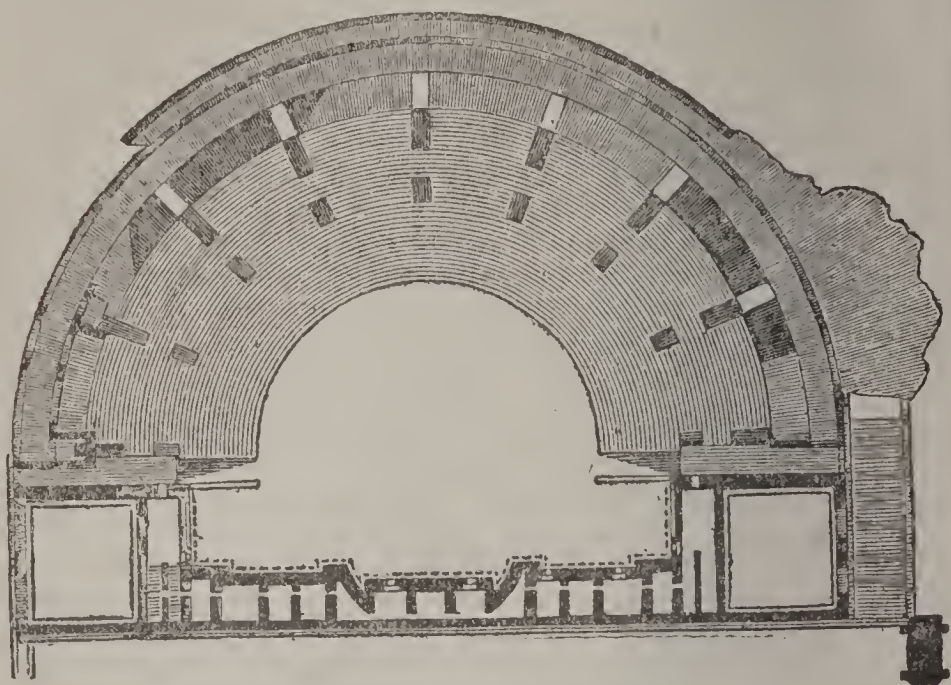


Fig. 1.—Plan of the Theatre at Orange. (From Fergusson.)

the scenes of dramatic performances. In France and England, where the climate did not so readily permit open-air representations, the first plays performed were exhibited in tennis or racket courts, in which there were usually galleries at one end; and as this accommodation was too limited, the galleries were afterward carried along the sides also. But dramatic literature soon became so important that buildings had to be designed expressly for its representation. Accordingly, in Paris, the T. of the Hôtel de Bourgogne was erected in the beginning of the 17th c. It was rebuilt 1645, with tiers of boxes on a square plan. In 1639 the T. of the Palais Royal was erected by Richelieu, and was long considered the best model. The present circular plan of the galleries, with pit sloping backward, seems to have been introduced in Venice 1639; and the horseshoe form of the boxes was carried out first by Fontana in the Tordinoni Theatre, Rome, 1675. The modern form of the auditorium was thus invented, and gradually improved and perfected, till in about a century similar theatres were erected all over Europe; the Scala T. at Milan, largest in Italy (1774), and the great T. at Bordeaux (1777). The annexed plan of the Scala T. at Milan (fig. 2) will show the general disposition of all the parts of the modern T. on the largest scale. Modern theatres all are similar in general distribution. They are divided into two distinct departments—the auditorium or audience department, and the stage or scenic department. In the former, the seats are invariably arranged on a sloping ground-floor or 'pit,' and on several tiers of galleries, extending in semi-circular or horseshoe form round the house. On the

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ground-floor, the front rows of seats are generally set apart as 'dress stalls,' and the back part only is then called the 'pit.' In opera-houses, the stalls generally occupy the greater portion of the space, and the 'pit' is reduced to a minimum. In dramatic theatres, the tiers of galleries have the floors arranged in stages, rising one above another in such manner as to enable all spectators to see over those before them to the front of the stage. In theatres for operatic representation, the galleries have the floors level, and are divided all round into private boxes. The top tier is, however, sometimes left partially open for seats. In the larger opera-houses, there are usually retiring-rooms

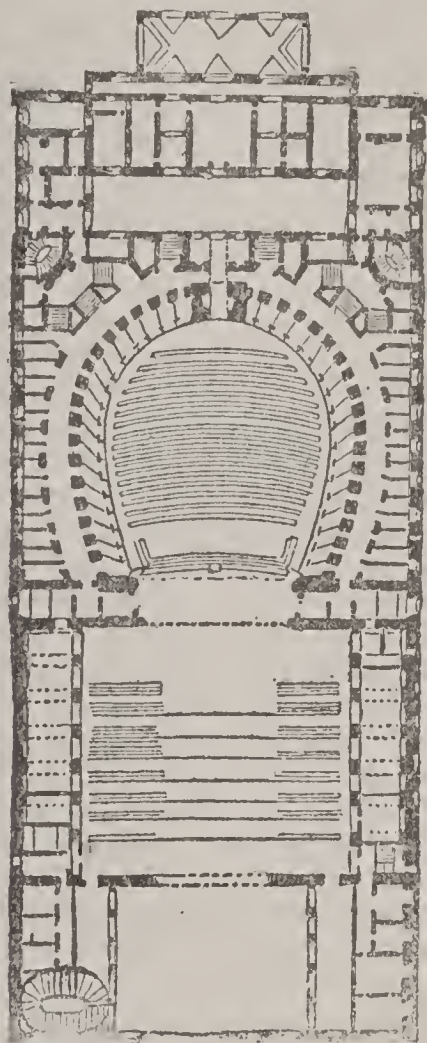


Fig. 2.—Plan of La Scala Theatre at Milan—scale, 100 feet = 1 inch
(From Fergusson.)

connected with each of the private boxes. There is also a 'crush-room,' or large saloon, in which the assembly may promenade between the acts. In all French theatres and opera-houses, these saloons, or *foyers*, are very large, and elegantly fitted up. They are almost always over the entrance-hall. In some modern French theatres there are two foyers, one over the other, for the different classes who occupy the dress-circle and the upper galleries. The question has often been raised as to the best form for a T., both for hearing and seeing. It is a difficult question to decide theoretically as regards hearing, but it is quite clear that the old semicircular plan of the Greeks is as nearly as

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possible the best for seeing, as it places the seats all round at equal distance from the centre of the proscenium; therefore this old form is usual in cases where seeing well is all-important, e.g., in a *lecture theatre*. In an oblong house, on the other hand, the seats at the centre of the galleries are much further removed than those at the sides from the centre of the stage, and are thus at disadvantage as regards hearing; while the side boxes are badly placed for a view of the stage. The entrances and staircases of theatres are not generally so well arranged or so spacious as they should be: in French theatres, this is especially the case—there being often only one narrow wooden stair on each side of the house, leading to all the galleries. Recent accidents by fire, and the risk through lack of proper exits, have drawn attention to this subject. In this country, in theatres recently built or remodelled, numerous exits are provided on various sides—some being very spacious. Besides the main passages for the public, there should be private passages and doors leading to every part of the house, so that the manager may pass with ease to any point in the building where his presence may be required.

The orchestra occupies the space immediately in front of the proscenium, and this space is arranged so as to be capable of being enlarged or contracted as occasion may require. The proscenium is a small portion of the stage which projects a few feet in front of the curtain, enabling the actors to stand well forward, that they may be distinctly heard by the assembly. The part of the house on either side of the proscenium is that on which there is usually the greatest amount of ornament. The sides and ceiling of the proscenium form, as it were, the frame through which the picture represented on the stage is seen; and as on it every eye must rest, it is made more ornate than the rest of the auditorium. The ceiling, presenting a broad surface and being well seen from many parts of the house, is also adapted for ornament, and is generally made as handsome as possible, as are likewise the fronts of the dress circle and galleries. The stage extends backward from the proscenium, and ought to be of considerable depth, to admit of scenic effects, dissolving scenes, etc. The great length of the stage from front to back is one of the most striking differences between the modern and the ancient T., and arises from the introduction and development of movable scenery—an invention of the architect Baldassare Peruzzi, and first used in Rome before Leo X., 1508. The floor of the stage is not level like the floor of a room, but is sloped upward from front to back, so as to elevate the performers and scenes at the back, and render them more easily seen. The inclination of the stage is generally about half an inch to every foot. The stage department of a T. must be not only very long, but also very lofty above, and deep below the stage, so as to allow the large frames on which the scenes are stretched to be raised or lowered in one piece. The stage itself is a complicated piece of mechanism, a considerable part of it being made

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movable either in the form of *traps*, for raising or lowering actors, furniture, etc., or in long pieces, which slide off to each side from the centre, to allow the scenes to rise or descend. There are also *bridges*, or platforms constructed for raising and lowering through similar openings, some of them the full width of the stage. The traps and bridges are usually worked by means of balance-weights, and the slides by ropes and windlasses. Besides the large *frames* above described as containing pictures occupying the full opening of the stage, there are other scenes which are pushed from the sides to the centre, each being only one-half the width of the opening. These are called *flats*, and usually slide in grooves above and below. The grooves are arranged in clusters at intervals, having clear spaces between, called the *entrances*, through which the actors pass on and off the stage. But in modern French theatres and in the opera-houses these grooves are regarded as an incumbrance to the stage, and have been discarded. Their place is occupied by narrow openings or slits in the stage, below which are blocks running on wheels, and containing sockets, into which poles are dropped from above, and to these the flats are attached. Another advantage of this system is, that the gas-wings and ladders may be made movable, and slip backward and forward in the same manner as the flats. When occasion requires, the whole stage can thus be entirely cleared. According to the old plan of fixed grooves, only the centre of the stage can ever be cleared without unscrewing all the grooves, and the gas-wings must always remain in the same relative position. Besides the flats, there are also smaller scenes which move in the grooves. These are called *wings*, and are used to screen the entrance. Corresponding to the wings are similar narrow scenes dropped from above: these are called *borders*, and are used to hide the gas-battens. These and the scenes which are drawn up, the gas-battens, etc., all are worked by means of ropes from the *flies*, or galleries running along the sides of the stage at a high level. The ropes from these passing up into the barrel-loft (a space in the roof filled with large drums and barrels on which the ropes are coiled) and down again to the flies, form a complication which seems to the uninitiated observer an inextricable confusion. Latterly a great change has been introduced into the higher class of theatres: this consists in the dismissal of wings or sliding side portions of scenes with intervening gaps, and substituting for them large pieces of scenery resembling the sides and further end of a room—an arrangement every way more natural. In cases of this improved kind, the actors enter on the stage and depart by doors. In connection with the stage, it is usual to have a large space set apart for containing scenery, called the *scene-dock*. This is frequently placed at the back of the stage, and may, on occasion, be cleared out, to give extra depth to the scene. There are also numerous apartments required in connection with the stage for the working of the T.—such as manager's room; dressing-rooms for actors and actresses; the 'green-room,' in which they as-

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semble when dressed, and wait till they are called; 'star-rooms,' or dressing-rooms for the stars; the wardrobe, in which the costumes are kept; furniture-stores; scene-stores; 'property'-maker's room; and workshops for the carpenter, gas-man, etc. There must be also a good painting-room, which must necessarily be a large apartment, from the size of the pictures which have to be painted—each being the full size of the opening of the stage. The canvas for these scenes is stretched on frames, which move up and down by means of a winch with balance-weights; and thus the painter stands comfortably on the floor, and moves his picture up or down, so as to get at any part he wishes. An interesting point on the stage is the prompt corner (on the right of the stage, but left of the spectators) from which the prompter has command of all the lights of the house, and bells to warn every man of his duty at the proper moment. He has a large brass plate, in which a number of handles are fixed, with an index to each, marking the high, low, etc., of the lights; and as each system of lights has a separate main pipe from the prompt corner, each can be managed independently. The side of the house on which the prompter is seated is called the 'prompt side,' and the other side is called the 'O. P.' or *opposite* side.

The house, or auditorium department, is generally lighted by means of a large lustre or sun-light in the centre of the ceiling; and much of the effect of the building depends on how this is managed. There are also usually smaller lights round at least one tier of the boxes. The proscenium is lighted by a large lustre on each side, and by the foot-lights, along the whole front of the stage. These are sometimes provided with glasses of different colors, called mediums, used for throwing a red, green, or white light on the stage. The stage is lighted by rows of gas-burners up each side and across the top at every entrance. The side-lights are called *gas-wings*, or *ladders*; and the top ones, *gas-battens*. Each of these has a main from the prompt corner. They can be pushed in and out, or up and down, like the scenery. There is also provision at each entrance for fixing flexible gas hose and temporary lights, to produce a bright effect wherever required: the mediums for producing colored light in this case are blinds of colored cloth. Another means of producing brilliant effects of light is the lime-light, by which, with lenses of colored glass, bright lights of any color can be thrown on the stage or scenery when required.

Theatres are often either very cold or insufferably hot. This arises from lack of proper means of heating, and insufficient ventilation. The centre lustre is the great cause of ventilation, the draught caused by its heat drawing off the foul air at the ceiling. The suction caused by this withdrawal of air is naturally supplied from the great body of air in the stage. The stage ought, therefore, to be moderately heated by means of hot-water pipes or otherwise, to prevent cold draughts. The passages and lobbies round the house should be heated in the same way, so that

any air drawn into the house may be properly tempered. An attempt has been made in Paris to obviate the great heat and draught caused by the centre lustre, by dispensing with it, and making the ceiling partly of glass, with powerful lights and reflectors behind the glass in the roof. This mode of lighting is of rather a subdued character for a T., though very appropriate to legislative chambers. The T. built at Baireuth 1876 for Wagner, and designed to carry out his views as to dramatic representation, has various devices for heightening the dramatic illusion; the orchestra, e.g., being beneath the level of the stage, and wholly invisible to the spectators.

There is a class of theatres in Germany which have a double auditorium, one at each end of the stage. One of these is arranged and lighted in the usual manner, and is called the Winter T. The other is called the Summer T., and is arranged for performances in daylight during the summer; it is lighted by large windows in the outer wall, which corresponds in form to the interior curves of the galleries; also by windows in the roof.

The new Grand Opera of Paris, opened 1875, is admittedly the finest T. in the world; it was built by government at a cost of more than 36,000,000 of francs (about \$7,200,000). Its auditorium is, however, seated for only 2,200 persons. (On the Théâtre Français and its constitution, see COMÉDIE FRANÇAISE.)

The art of *dramatic representation* has undergone great changes. In ancient Greece, partly from the character of the subjects selected, partly from the origin of the drama itself, costume and acting were conventional, artificial, and stereotyped. On this point, we quote Witzschel's handbook (transl.): 'There can be no doubt that the somewhat fantastic costume which was handed down without any change from one generation of actors to another was closely connected with the religious character of their tragic performances. The peculiar fashion and brilliant colors of the tragic wardrobe belonged rather to the Dionysian solemnities than to the stage. That Æschylus, by whom the greater part of it was invented, kept steadily in view the original intention of tragedy, is evident from the notices which we find in ancient writers of his theatrical dresses having been worn in other religious ceremonies and processions. It is only reasonable to suppose that he would have given to the tragic stage a wardrobe of a very different description had he not been influenced by the conviction that theatrical performances were in some sort a religious ceremonial. Another proof of the general feeling on this subject is found in the ridicule with which Aristophanes overwhelms Euripides for introducing his heroes not only in pitiable situations, but in dirty, ragged, and beggarly weeds, to the great disgust of all true-hearted Athenians, and the utter annihilation of tragic ideality. In the *Acharnenses*, the whole of the tragic poet's squalid wardrobe is held up to public derision.

'The tragic costume for male characters of the highest rank consisted of an embroidered tunic with sleeves, which

in the older personages reached to the feet (*chiton podēres*), and in the younger to the knees. Over this was thrown a green pall, or long mantle (Gr. *surma*, L. *pulla*), which also reached to the feet, and was richly ornamented with a purple and gold border. Persons of high but not royal rank wore a shorter red mantle, embroidered with gold, which was partially covered by a richly embroidered, high-fitting scarf. Soothsayers wore over the tunic a kind of network, composed of woolen threads. A sort of waist-coat (*kolpōma*) was also worn over the tunic. This was the costume of powerful and warlike sovereigns, such as Atreus, Agamemnon, etc. Dionysus (Bacchus) appeared in a purple tunic, which hung negligently from an embroidered shoulder-knot, and in a thin, transparent, saffron-colored upper robe, with a thyrsus in his hand. Even Hercules himself was not the athletic hero of the old mythology, with a lion's skin thrown loosely round his muscular limbs, but a solemn, theatrical personage, enveloped in a long mantle. The costume of a queen was a flowing purple robe, with a white scarf; and for mourning, a black robe and blue or dark yellow shawl. Persons in distress, especially exiles, wore dirty-white, dark-gray, dingy-yellow, or bluish garments. . . . To increase their height, the tragic performers wore the cothurnus, a sort of buskin, with high soles and still higher heels, which compelled them to walk with a measured and sounding tread, and a top-knot of hair, or toupet (Gr. *ongkos*), suitable to the age and condition of the character represented. A corresponding breadth of figure was produced by means of padding and by a sort of glove. Thus equipped, the tragic hero seemed a giant as compared with ordinary mortals. Lastly, they had the mask, a part of the ancient theatrical costume, which seems to us strange and unnatural. For its meaning and origin, we must go back to the Dionysian festival, at which the excited crowd were wont, in honor of the jolly god, to smear their faces with lees of wine—and at a later period, when dramatic interludes were attempted, with vermilion—or to cover their cheeks with rude masks of bark. In the course of time, these primitive inventions were discarded, and their place supplied by linen masks, characteristically painted. For the sake of retaining this uncouth but distinctive appendage of the Dionysian festival, the Greeks were content to forego the delicate expression of feeling and eloquent play of features indispensable to a modern actor; but on the other hand, when we remember the enormous size of their theatres, which scarcely permitted the assembled thousands to hear what was said by the actors, still less to distinguish their features, we are forced to acknowledge that the practice of wearing masks was rather an advantage than an inconvenience. The above description is, in the main, applicable to the Roman as well as the Greek theatres. The only additional point which it is necessary to notice is that, among the ancients, the acting of plays was not (as it is now) a regular and daily, but only an occasional affair, at festival seasons and the like. With the fall of the Western Empire, the

disappearance of classic paganism and classic tastes, and the triumph of the Christianized barbarians of the north and east, theatrical performances ceased. But the liking for such things is not artificial; it is natural and irrepressible; and gradually, as the ancient culture resumed something of its former sway, efforts were made, not, indeed, to re-enact the majestic tragedy of Greece (for its language was scarcely known), or the pungent comedy of Rome, but to throw into dramatic form the 'mysteries,' 'miracles,' and 'moralities' of the Christian religion. The rudeness of these mediæval plays may perhaps suggest to us what Greek performances were before the days of Thespis. In fact, they were introduced as a means of edifying as much as of amusing the ignorant laity, were customarily the work of monks, and were performed on festive occasions in the churches. It does not appear that they were accompanied by any *scenic* representations. A raised wooden stage like that which forms the front of a travelling show was all that the untutored taste of the times demanded. Nor are we to suppose that the slightest attention was paid to propriety of costume or speech. The personages rather than the actions, the ceremony rather than the dialogue, the moral rather than the matter, were the things looked to; hence no subtle or artistic representation of life and character was possible. See MYSTERIES AND MIRACLE-PLAYS. The development of the modern Drama (q.v.) ultimately restored the art of the actor to its ancient dignity and importance; but it was long before those changes took place that gave theatrical performances their modern character. Good acting—i.e., skilful impersonation of character and varied elocution—became quite common in England after the Restoration, and was not unknown before it; but appropriate costume and scenery were scarcely thought of until the time of Talma (q.v.), toward the close of the 18th c. Since then, the best theatres have displayed a creditable desire to reproduce, with something of verisimilitude, the outward 'form and pressure,' the garb, deportment, and air of the age represented.

The employment of female actors is of French origin, and dates from the first half of the 17th c.; but they were not permitted (without molestation) to tread the English stage till 1661. Before this innovation, female parts were performed by youths; and though it ill consorts with *our* ideas of adequate representation to conceive the parts of Desdemona, Ophelia, Cordelia, etc., executed by those of another sex, several actors appear to have obtained wonderful success in this line.

The title of 'His Majesty's Servants,' which English actors once bore, originated in the fact that some of them were really members of the royal household. The king and particular nobles kept troupes of actors for their own pleasure, whom they sometimes permitted to go about the country and perform. The first prince of whom we read as giving 'servants' such permission was Richard, Duke of Gloucester (afterward Richard III.). In Queen Elizabeth's time (1571), the Earl of Leicester's 'servants' were

THEATROPHONE—THEBAN.

licensed to open the first *public* T. in England, and it is owing to the fact that actors originally formed part of the household of the king that in Great Britain a license from the lord chamberlain is still necessary to the opening of a theatre.—See DRAMA.—For an anecdotal and amusing history of the English stage, see *Their Majesties' Servants*, by Dr. Doran (1865); also Dutton Cook's *Book of the Play* (1876).

LAWS AS TO THEATRES.—In the United States, no general law, federal or state, governs the conduct of theatres as distinguished from other places of assembly for amusement, instruction, or social intercourse. The local municipal authorities usually require theatres to be licensed and to pay a tax. Except in cases of flagrant scandal, the police power does not interfere in the management of theatres. There is no public censorship of theatrical compositions. But the local authority that grants the license may withdraw it in case a play is billed which is deemed offensive, or on any account objectionable; and the theatre manager has no remedy at law. The mayor of New York by refusing a license prevented (about 1880) the enacting of a 'passion play.' In New York City the Soc. for Prevention of Cruelty to Children prohibits the employment of young children on the stage and in giving miscellaneous exhibitions. Similar methods of indirect control of theatres are employed in other cities.

THEATROPHONE, *thē'a-trō-fōn* or *thē-ăt'*. [*theatre*, and Gr. *phone*, voice]: telephone system to transmit the words of a play acted in a theatre. The T. is in operation in Paris. Private houses are put in uninterrupted communication with the theatres; but in hotels, restaurants, and other places of public resort, communication is dependent on insertion into the instrument of a coin—say a 10-centime piece; thereupon the T. transmits the words of the actors for a limited time, when communication is cut off; but it is re-established by inserting another similar coin.

THEBAID, *thē-bā'id*, **THE**: originally the region around Thebes in Egypt; even in Herodotus, a name of Upper (or s.) Egypt. The desert of the Lower T. was the cradle of monasticism. Thither Paul, the first Christian hermit, retired about A.D. 250; there Anthony, Paul's famous successor, lived more than 60 years, at his death leaving the desert studded with the huts of anchorets.

THEBAINE, n. *thē-bā'in*: a pain-allaying but not soporific alkaloid of opium; called also *Thebaia*: see OPIUM.

THEBAN, a. *thē-bān*: of or from *Thebes*, in Egypt: N. a native or inhabitant of Thebes. **THEBAN YEAR**, the anc. Egyptian year of 365 days 6 hours.

THEBES.

THEBES, *thēbz*: celebrated Egyptian city, called by the Egyptians Taape, or Taouab; by the Hebrews, No-Amen; by the Greeks, Thebæ; and at a later period, Diospolis Magna; formerly capital of s. Egypt. Its ruins, in the broadest section of the valley of the Nile, about lat. 26° n., are the most extensive in Egypt, and comprise nine townships, the most remarkable of which are Medinat Habu, Gournah, Karnak, and Luxor. Its local and eponymous god was Amen-Ra, or Jupiter Ammon; and its foundation traditionally dated from the time of Menes, founder of the monarchy, though no remains of so early a date have been discovered on the site. Recent excavations have brought to light constructions of the 11th dynasty, whose kings appear to have founded the original temple of the god. The Nile flows through the midst of the ancient city, dividing it into four principal quarters: Karnak and Luxor on the e. bank, and Gournah and Medinat Habu on the w. bank. The most flourishing period of the city was under the 18th, 19th, and 20th dynasties, about B.C. 1500-1000, when it had supplanted Memphis, ancient capital of the Pharaohs. The more central situation of this city probably caused it to rise into importance, for it was secure against the northern enemies of Egypt; hence, under these Diospolitian dynasties, the worship of Amen-Ra rose to all its splendor: magnificent palaces and temples were built in the different quarters, to which additions were made by later monarchs, and even by the Ptolemies and Romans till the time of the Antonines, in the 2d c. after Christ. Here, too, were the cemeteries of the Theban monarchs and of the officers of their courts, colleges of priests, and the seat of royal government. It was enriched by the spoils of Asia and the tributes of Ethiopia, and its fame had reached the early Greeks, Homer describing it by the epithet Hekatompylos, or City of a Hundred Gates, in allusion to its propylæa, for T. was never a fortified city. In the plenitude of its power, it sent forth an army of 20,000 war-chariots; but the Bubastite and Tanite dynasties removed the capital again to Sais and Memphis, and T. declined in importance, though retaining much of its ancient grandeur. At the Persian conquest, Cambyses obtained a spoil of nearly \$10,000,000 from the city, destroyed many of its noblest monuments, and lessened its political pre-eminence. The founding of Alexandria still further injured the city; and at the time of Strabo, T. was only a cluster of small villages, about 9½ m. in length (according to Diodorus), and in circuit about 16 m. Its temples, tombs, and ruins were visited by Roman travellers, including Hadrian. At a later period a considerable Christian population existed under the empire; but the inhabitants fled at the Arab invasion to Esneh; and T. is now inhabited by only a few Arab families of Fellahin, who obtain precarious livelihood by guiding travellers over the ruins, or rifling the tombs for antiquities. At Gournah is seen the Memnoneion, built by Rameses II.; with a colossus (broken) of that monarch, weighing 887½ tons, the largest statue in Egypt.

This is supposed to be the palace of Osymandyas, described by Hecatæus, and is of considerable extent. In this quarter are two palace-temples of Amenophis III., and the vocal Memnon, or celebrated colossus of that monarch, supposed by the ancients to emit a sound at sunrise. At Medinat Habu is a pile of buildings, begun by Thothmes I., of the 18th dynasty, with courts and propylæa, built by Rameses III. or Rhampsinitus, and sculptures representing his victories over the Philistines, the life in his barem, the riches of his treasury, and a calender with inscriptions dated in the 12th year of his reign. Here, 8,000 ft. to the n.w., are the cemeteries of sacred apes; and 3,000 ft. beyond, the valley of the Tombs of the Queens, comprising 17 *syringes*, or sepulchres, supposed to be the tombs of the Pallacides of Amen, mentioned by Diodorus and Strabo. Near them are the Biban-el-Meluk, or tombs of the monarchs of the 19th and 20th dynasties, 16 in number: the most interesting of which are that of Sethos I., called Belzoni's, after its discoverer, and those of Rameses III. and Siptah. At Gournah itself are the tombs of functionaries and others, and this latter site has enriched the museums of Europe with antiquities of various kinds. The palaces of the Luxor quarter were founded by Amenophis III.: hence was removed the obelisk now in the Place de la Concorde in Paris. Still more magnificent than any of these is the temple of Karnak, whose sanctuary, built by Osertesén I., of the 12th dynasty, was enlarged by the monarchs of the 18th dynasty. The most remarkable part of this wonderful mass of courts, propylæa, and obelisks, is the great hall, 170 ft. by 329 ft., built by Sethos I. and Rameses II., having a central avenue of 12 massive columns, 60 ft. high, 12 ft. in diameter; 122 other lofty columns; and 2 obelisks, 92 ft. high. Here is the so-called Portico of the Bubastite, built by Shishak I., recording his expedition against Jerusalem, B.C. 971. An important discovery was made 1881 in a rock-cut gallery in cliffs 4 m. e. of T., including 39 mummies of royal and priestly persons, five perfect papyri, and thousands of mortuary statues and other objects. They may have been hidden here by the priests in the invasion by Cambyes. The mummies belong to personages from the 17th to the 21st dynasties; and among them are those of Thothmes III., who erected the obelisk now on the Thames Embankment, London, and of Rameses II. (q.v.). For various Theban obelisks, see OBELISK.

THEBES: principal city of Bœotia, in ancient Greece, in the s. part of the country, on the slopes of Mount Teumessus, and between two streams, the Dirce and the Ismenus. According to the prevalent tradition, T. was founded by a colony of Phœnicians under Cadmus (q.v.), after whom the city was called Cadmeia—a name subsequently restricted to the citadel; but passing over the long series of picturesque and tragic myths that have given T. its prehistoric fame (in which the central figure is Œdipus), we catch the first quasi-authentic glimpse of Theban history in B.C. 8th c., when one Philolaus, a Corinthian,

THECA—THECAPHORE.

settled in the place, and drew up a code of laws for the inhabitants. Near the end of B.C. 6th c. we reach a purely historical period—the earliest well-attested event being the dispute between T. and another Bœotian city, Plataeæ, which involved T. in an unsuccessful war with Athens. Thenceforth the relations of T. and Athens were, except for brief intervals, marked by bitter enmity. During the Persian war, T. shamefully sided with the Asiatic invader, and, in consequence, lost much of its power and prestige. Athens proposed to deprive the city of its supremacy over the Bœotian confederacy; but Sparta, always jealous even to spitefulness of her Attic rival, interfered, and forced the other Bœotian cities to acknowledge anew their unworthy mistress. When the Peloponnesian war broke out, T. took part with Sparta, and at its close was eager for the destruction of Athens; but soon afterward it became jealous of the overgrown power of its ally, and gave friendly shelter to those Athenians whom the oppression of the Thirty Tyrants (q.v.) compelled to abandon their city. From T., Thrasybulus and his co-patriots started on their famous expedition for the deliverance of Athens, accompanied by a body of Theban citizens. A keen and bitter antagonism now sprang up between T. and Sparta, which, after many vicissitudes, ended in a great military struggle B.C. 379–362, in which T., under the heroic guidance of Epaminondas (q.v.), achieved a brilliant triumph, and for a time held the position of foremost power in Greece. It was now the time for Athens to revive her ancient animosities; and for a while they had free play. At length the eloquence of Demosthenes induced both states to unite in opposition to the encroachments of Philip of Macedon; but it was too late; and B.C. 338 the battle of Chæroneia crushed the liberties of Greece. After Philip's death, the Thebans made a fierce but unsuccessful effort to regain their freedom. Their city was taken by Alexander, who levelled it to the ground and sold the entire population—men, women, and children—into slavery. For 20 years it remained an utter desolation; but B.C. 315 it was rebuilt by Cassander, who gathered into it all the Thebans whom he could find in Greece. It was again destroyed by the Romans, and did not recover till about the decline of the empire. During the 11th and 12th c. it was the seat of a considerable population, engaged in the manufacture of silk; but under the Turks it again declined, though it has still a modern representative, Thebes, or Thivæ (pop. 4,000). Scarcely a relic of antiquity has survived the ravages of time.

THECA, n. *thĕ'kă*, **THECÆ**, n. plu. *thĕ'sē* [Gr. *thĕkē*, a sheath or case]: in *bot.*, the case containing the spores in some flowerless plants; in *anat.*, an organ or part which incloses another or contains something; a sheath or case. **THE'CAL**, a. *-kăl*, pertaining to or of the nature of a theca.

THECAPHORE, n. *thĕ'kă-fōr* [Gr. *thĕkē*, a sheath; *phorĕō*, I bear]: in *bot.*, the roundish stalk on which the ovary of some plants is elevated.

THECASPOROUS—THEISM.

THECASPOROUS, a. *thē-kā-spōr'ūs* or *thē-kās'pō-rūs* [Gr. *thēkē*, a case; *spora*, a seed]: in *bot.*, having the spores in thecæ or cases, as some fungi.

THECLA, *thēk la*, **SAINT**: a virgin saint of the early church, whose existence may be considered historical, though almost all the details regarding her are legendary. According to the legend, T. was of a noble family of Iconium in Lycaonia, where she was converted by the preaching of the apostle Paul, and having devoted herself to a life of virginity, suffered a series of persecutions from her intended bridegroom, as well as from her parents. She is styled in the Greek martyrologies the *proto-martyress*, as Stephen is the proto-martyr; while in the Roman Breviary she is said to have died at the age of 90 in Seleucia. The apocryphal *Acts of Paul and Thecla* were edited by Tischendorf: a translation is in the *Ante-Nicene Christian Library*.

THECODONT, n. *thē'kō-dōnt* [Gr. *thēkē*, a sheath or case; *odous* or *odonta*, a tooth]: a saurian which has the teeth implanted in sockets. **THE'CODON'TIA**, n. plu. *-dōn'-shī-ă*, one of the thirteen orders into which Professor Owen arranges the reptilia, living and extinct.

THECOSOMATA, n. plu. *thē'kō-sō'mă-tă* [Gr. *thēkē*, a sheath; *sōmata*, bodies]: a division of pteropodous mollusks, in which the body is protected by an external shell.

THEE, v. *thē* [AS. *theon*, to grow, to thrive: Goth. *theihan*, to increase]: in *OE.*, to thrive; to flourish; prosper.

THEE, pron. *thē* [AS. *thē*, thee: Goth. *thuk*, thee]: the objective case of *thou*.

THEEK, or **THEIK**, v. *thēk* [see **THATCH**]: in *Scot.* and *prov. Eng.*, to thatch.

THEFT, n. *thēft* [Goth. *thiufs*; Icel. *thjofr*; Ger. *dieb*, a thief]: the taking possession of the goods or movables of another secretly without leave or with violence; the act of stealing; Larceny (q.v.); that which is stolen (see **STOLEN GOODS**, **PURCHASE OF**). **THEFT'UOUS**, a. *-ū-ūs*, in *Scots law*, of the nature of theft; tainted with theft. **THEFT'UOUSLY**, ad. *-lī*.

THEINE, n. *thē'in*, or **THEINA**, n. *thē-i'nă* [new L. *thēa*, the tea-plant]: a bitter and volatile principle, obtained in the form of fine white prisms, of a silky lustre, from tea, coffee, etc.; same as *caffeine*: see **TEA**: **CAFFEINE**.

THEIR, poss. pron. *thār* [AS. *thara*, of the, of those: Icel. *their*, they; *theirra*, of them]: of them; poss. plu. of *They* (q.v.). **THEIR** is used when prefixed to a noun or to an adjective and its noun, as, *their* own statements; **THEIRS** is employed as the substitute for a noun, and stands alone, as, the statements are *theirs*, *theirs* is the best-cultivated field.

THEISM, n. *thē'izm* [F. *théisme*, theism—from Gr. *thēōs*, a god]: belief in the existence of a God, with or without belief in a revelation; opposed to *atheism* (see below). **THE'IST**, n. *-ist*, one who believes in the existence of a God. **THEISTIC**, a. *thē-īs'tik*, or **THEIS'TICAL**, a. *-tī-kāl*,

THEISS—THELLUSSON ACT.

pertaining to theism. **THEIS'TICALLY**, ad. -*kāl-lī*.—*Theism* is the same word etymologically with *deism* [L. *dēus*, a god], but a distinction is in use between them: *theists* maintain the existence of a Deity who governs all things by constant exercise of his beneficent power: *deists* admit the existence of a God who created all things, but affirm that, having laid down immutable laws for their government, He does not further exercise administration; they deny a supernatural revelation: *atheists* deny the existence of a God, and hold that the elements of all material things are eternal, and that creation is merely one of the results of natural law. Theism is therefore opposed both to atheism and to deism, as well as to polytheism, pantheism, materialism, secularism, positivism, and agnosticism. Christianity is ranked among theistic systems; the other great theistic systems being Judaism and Mohammedanism. Many of the separatists from orthodox Christianity are theists—e.g., the Unitarians (q.v.); and the Brahmo Somaj (q.v.) of India is theistic in a general sense. Some theists deny most that the deists deny. The philosophy of the younger Fichte (q.v.), and of some other modern German philosophers, is distinctively known as *Theistic* or as *Ethical Theism*.—See **RELIGION: GOD: CHRISTIANITY: PANTHEISM: MATERIALISM: AGNOSTIC: SECULARISM: POSITIVISM: ETC.**

THEISS, *tīs*: chief river of Hungary, an important affluent of the Danube; rising by two streams, the Black T. and the White T., in the Carpathian Mts. It flows n.w., s.w., and finally s., joining the Danube, after flowing parallel to it 300 m. The T. has several large and navigable affluents, e.g., the Maros and Bodrog. Its lower course is sluggish, and it has often inundated the plains, flooding the cities on its banks, such as Szegedin (overwhelmed 1879). The T. is extraordinarily rich in fish, and has been described as 'two-thirds water and one-third fish.' Its entire length, including windings, is 828 m.

THEISTIC CHURCH, n. *thē-īs'tik*: in *chh. hist.*, a church founded London 1871, for the purpose of promoting the theistic views of the Rev. Charles Voysey, formerly vicar of Healaugh. Some men of eminence were among its promoters. Their belief recognizes one living and personal God, declares for individual liberty of opinion and for progressive thought, bases religion on morality, and asserts the ultimate goodness and blessedness of every human being.

THELLUSSON ACT, *tēl'lūs-son*: act of the Brit. parliament in the reign of George III., for checking the disposition of testators to accumulate the income of their estates until it should form a large fortune. A testator named Thellusson had, by his will, directed such investments in land, and such accumulations limited to certain lines of his descendants, and continuing to a distant time, as would amount to an estimated fund approaching \$100,000,000—his object being to found three families springing from his three sons. The legislature, soon after his death, took the earliest opportunity, by passing the T. act, of pre-

cluding testators from this method of prospective accumulation beyond a period of 21 years. Ultimately, the fund was distributed among a greater number of claimants. The litigation ended by a decree of the house of lords 1858.

THEM, pron. *thēm* [AS. *thám*, to them]: the objective case of the pron. *they*. THEMSELVES', comp. pron. *-sēlvz'* [*them*, and *selves*]: an emphatic form of *them*; those very persons.

THEME, n. *thēm* [F. *thème*—from L. and Gr. *thēma*, a theme—from Gr. *tithēmi*, I place; It. *tema*]: a subject for discussion; the subject on which a person speaks or writes; a short essay on a given subject; the primary or radical part of a verb; the stem or part to which the inflectional endings are added; in *music*, a series of notes selected as the subject of a new composition; the leading subject or melody of a movement. THEMATIC, a. *thē'māt-ĭk*, pertaining to or containing a theme. THEMATIST, *thēm'a-tĭst*, writer of themes.

THEMIS, n. *thē'mĭs* [L. and Gr. *Thēmis*, Themis: Gr. *thēmīs*, that which is established by old usage, law—from *tithēmi*, I place]: in *anc. myth.*, the goddess of law and justice: in *astron.*, one of the asteroids.—*Themis* was daughter of Uranus and Gē, wife of Zeus, and, by him, mother of the Horæ (Hours) and Mœræ (Fates), as also of Eunomia (Equity), Dikē (Justice), and Eirēnē (Peace). In Homer the name denoted custom, or unwritten law. T. was regarded as the personification of order and justice, or of whatever is established by 'use and wont,' and as such was charged by Zeus to convoke the gods, and preside over them when assembled, being likewise represented as reigning in the assemblies of men. In modern art, T. is represented as having her eyes bandaged, holding a pair of evenly balanced scales in one hand, and a sword in the other.

THEMISTOCLES, *thē-mĭs'to-klēz*: Athenian general and statesman: b. in the latter part of B.C. 6th c.; d. at the age of 65, prob. between B.C. 460 and 447; son of an obscure citizen of Athens. From early life he was actuated by excessive ambition, and began his public career by opposition to the principal men of the state, chiefly Aristides, 'the Just.' It is uncertain whether he was at Marathon, but there is no doubt that the laurels gained there by Miltiades fired T.'s ambition. From the time (483) that he got his inconveniently upright rival, Aristides (q.v.), ostracized, he was regarded as the political leader in Athens, being made Archon Eponymus 481. To recover for Athens the naval supremacy in Greece, and that she might be prepared to meet the expected Persian invasion, he persuaded the Athenians to apply the proceeds arising from the silver mines at Laurium to construction of a fleet, sagaciously foreseeing that his country's only chance of overcoming her enemy was by sea. In the battles of Artemisium and Salamis (480), disastrous for the Persians, T., commander of the Athenian fleet, the largest in Greece, to avoid dissensions, was content to serve under Eurybiades the Spartan.

On both these occasions, it was only by the greatest tact, combined with threats and a judicious outlay of the bribes which he himself had received in profusion, that T. could induce the other commanders to come to an engagement with the Persians. On the night previous to Salamis, he sent a faithful slave to tell Xerxes that now was his opportunity for attack, as the Greek fleet was dividing and about to disperse; by this stratagem securing either victory to the Greeks, or the favor of Xerxes to himself in case of defeat: see SALAMIS. In several other ways did the wily T. contrive to provide for himself a safe retreat at the Persian court in case of disaster. The victory at Salamis raised his reputation to the highest point. Not neglecting his own personal aggrandizement, he sailed round among the Grecian islands, and extorted enormous sums from those inhabitants who had sided with the enemy, from which exactions he filled his own purse. Shortly after the Persian invasion, partly through Spartan influence, partly because of his offensive boastfulness, he lost favor with the Athenians, was accused of bribery and extortion, and B.C. 471 was ostracized, and retired to Argos; and finally, to escape being tried for treason, in which he was implicated by the correspondence of Pausanias, he betook himself 465 to the court of Artaxerxes, King of Persia, as a fugitive from the ungrateful country which he had saved; but before he would see the king himself, got permission to wait a year, during which he made himself master of the language and usages of Persia. At the end of this time, he managed to raise himself so highly in the king's favor, that, after the Persian fashion, the town of Magnesia was appointed to supply him with bread, Lampsacus with wine, and Myus with other provisions. He abode at Magnesia for the short remnant of his life. Some authorities assert that he poisoned himself. A monument was erected to T. in the market-place of Magnesia, and it is said that his bones were secretly taken to Attica, and burned there. Undoubtedly, T. was a man of very great sagacity and determination; and had a quick and keen perception of difficulties both present and future, which his ready invention, backed by promptness of action, enabled him to meet and overcome. On the other hand, he appears to have been devoid of moral principle, his greatest ambition apparently having been to make himself, by fair means or foul, the greatest man in Greece.

THEN, conj. *thēn* [AS. *thonne* or *thænne*; Ger. *dann*; Dut. *dan*, then]: in that case; therefore; in consequence: AD. at that time, referring to a specified time either past or future; soon afterward; at another time. BY THEN, by that time. NOW AND THEN, at one time and another; at intervals of time. TILL THEN, until that time.

THENAR, n. *thē'nār* [Gr. *thēnar*, the palm of the hand]: in *anat.*, the palm of the hand or sole of the foot; also the fleshy mass which forms the ball of the thumb, consisting of four muscles. THENAR, a., or THENAL, a. *thē'nāl*, pertaining to the thenar.

THENARDITE—THEOCHRISTIC.

THENARDITE, n. *thē-nâr'dīt* [after *Thenard*, French chemist]: sulphate of soda occurring in crystalline crusts, of a vitreous-white color, at the salt-springs near Madrid, and in Peru: it is used in preparing sodium carbonate.

THE'NARD'S BLUE: see **BLUE**.

THENCE, ad. *thēns* [A.S. *thanan*; Ger. *dannen*, thence]. from that place, source, or time; for that reason; in consequence: though inelegant, and a pleonasm, the use of *from thence*, for *thence*, is not uncommon, even among good writers. **THENCEFORTH**, ad. *thēns'fōrth* [*thence*, and *forth*], or **THENCEFOR'WARD**, ad. [*thence*, and *forward*]: from that time onward.

THEO-, prefix, *thē-o* [Gr. *theos*, God]: the first element in many words derived from the Greek referring to the Divine Being or divinity.

THEOBALD, *thē'o-bawld*, LEWIS: 1683-1744, Sep.; b. Sittingbourne, Kent, England; son of an attorney. He published 1714 a tragedy, *Electra*, and afterward dramas. As dramatist and poet he has long been forgotten; but as the favorite butt of Pope he is immortalized in the *Dunciad*. Besides this unenviable distinction, T. has some claim to be remembered as one of the most laborious and useful of early Shakespearean editors and commentators. In this capacity, dull as he undoubtedly was, he did good service to the poet. The hatred of Pope he incurred by his pamphlet, 1726, *Shakespeare Restored, or a Specimen of the many Errors as well committed as unamended by Mr. Pope in his Edition of this Poet*; but though he could not compete with his adversary in wit, he proved himself a more competent editor of Shakespeare by his ed., 7 vols. 8vo, 1733, which quite extinguished that of his rival.

THEOBROMA, n. *thē'ō-brō'mă* [Gr. *thēōs*, a god; *brōmă*, food]: in *bot.*, a genus of plants producing the caeao or chocolate nut, forming the chief ingredient in chocolate; the beans of the *Theobrōma cacaō*, ord. *Byttneriăcēæ*. **THE'OBRO'MINE**, n. *-mīn*, crystalline alkaloid ($C_7H_8N_4O_2$), nearly related to theine, found in the seeds of *Theobrōma cacaō*. It is less soluble in water than caffeine, but resembles that substance in forming crystallizable salts with some of the acids. By dissolving theobromine in a solution of ammonia, and adding nitrate of silver, a gelatinous precipitate is obtained, which, by boiling with a solution of ammonia, yields a crystalline mass of theobromide of silver ($C_7H_7AgN_4O_2$), in which 1 equivalent of hydrogen is replaced by 1 of silver. This compound, when heated to 212° F. with methyl-iodide, is converted into methyl-theobromine, $C_7H_7(CH_3)N_4O_2$, which has precisely the same elements (and in the same proportions) as thiene or caffeine, $C_8H_{10}N_4O_2$.

THEOCHRISTIC, a. *thē'ō-krīs'tīk* [Gr. *thēōs*, a god; *christos*, anointed]: anointing by God.

THEOCRACY—THEOCRITUS.

THEOCRACY, n. *thē-ōk'ra-sī* [Gr. *thēōkratīa*, the rule of God—from *thēōs*, a god; *kratos*, strength. F. *théocratie*]: government by immediate direction of God, e.g., in the anc. Jewish state; the state thus governed. **THEOCRATIC**, a. *thē-ō-krāt'ik*, or **THE'OCRAT'ICAL**, a. *-ī-kāl*, pert. to or of the nature of a theocracy; administered by the immediate direction of God. **THE'OCRAT'ICALLY**, ad. *-lī*.—*Theocracy* is that form of government in which God is regarded as the sole sovereign, and the laws of the realm as divine commands rather than human ordinances. Under such a view, the priesthood necessarily become the promulgators and interpreters of the 'divine commands,' and act as the officers of the invisible Ruler. The most famous example of a T. is that established by Moses among the Hebrews.

THEOCRASY, n. *thē-ō-krā'sī* [Gr. *thēōkrāsia*—from *thēōs*, a god; *krasis*, a mixing]: a mixture of the worship of different gods, as of Jehovah and idols; in *anc. phil.*, an intimate union of the soul with God in contemplation.

THEOCRITUS, *thē-ōk'ri-tūs*: earliest and most celebrated Greek pastoral poet: b. Syracuse, early in B.C. 3d c.; date of death unknown; son of Praxagoras and Philinna. The period of his greatest literary activity was probably about B.C. 272. About the close of the reign of Ptolemy Soter, he visited Alexandria, where he received instruction and made his first successful essays in poetry. He was patronized by Ptolemy Philadelphus, then assisting his father, Ptolemy Soter, in the government of Egypt; and in honor of his patron, he composed, about B.C. 285, his 14th, 15th, and 17th idyls. He was an acquaintance of the poet Aratus, to whom he addressed his 6th idyl. He subsequently revisited Syracuse, where he resided under Hiero II. From his 16th idyl, it is inferred that he was dissatisfied with the political state of Sicily, also with the insufficient rewards which his poems received from Hiero; and that he turned his literary art toward rural life. The idyls of T. are principally representations, dramatic and mimetic, of the every-day life of the Sicilian peasantry. They were successfully imitated by Virgil, and have given origin to the pastoral literature of mediæval and modern times, which is, however, deficient in the simplicity, fidelity, and therefore poetry of the Syracusan author. T. knows nothing of the imaginary shepherds of a fictitious Arcadia; his dramatic simplicity and truth are in wide contrast to the affected sentiment, the unnatural innocence, and the artificial simplicity of that unreal world. Comedy and pathos enter freely into his representations of rural Sicilian life, and his idyls retain the charms of freshness and nature even to the present day. Not all of them are strictly bucolic; and of the 30 ascribed to T. a few are not genuine. They are written in a mixed dialect, in which the softened Doric prevails; and with a few lines from a lost poem called *Berenice*, and 23 epigrams in the Greek Anthology, they form his literary remains, of which the best eds. are those of Meineke, and Fritzsche (2d ed. 1870): there are English translations by Creech, Chapman, Calverly, and others.

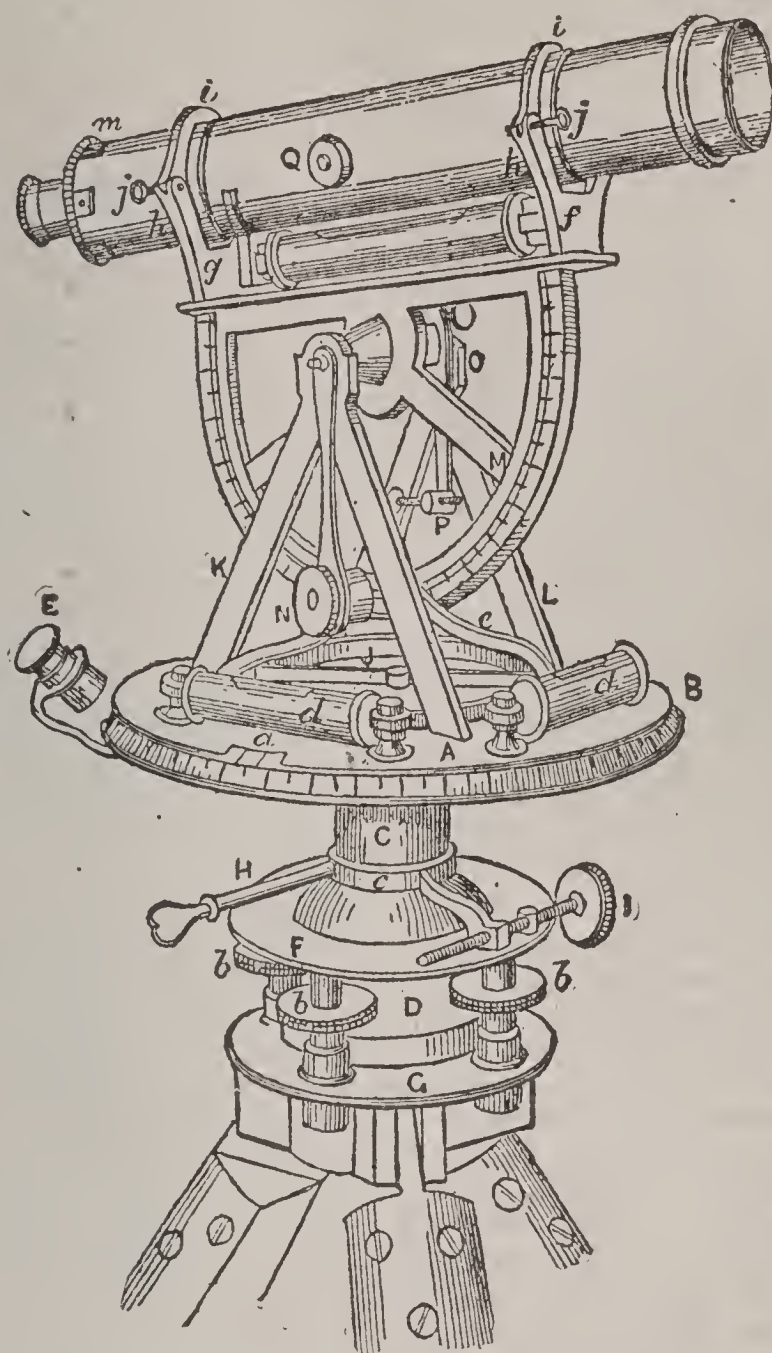
THEODICY—THEODOLITE.

THEODICY, *thē-ōd'ī-sī* [Gr. *Theos*, God, and *dikē*, justice; L. *Theodicaea*, the judgment of God]: systematic exposition of the theory of Divine Providence, with a view especially to vindication of the attributes, particularly the holiness and justice, of God in establishing the present order of things, in which evil, moral as well as physical, so largely appears to prevail. The name is of modern origin, dating from the close of the 17th c. or the beginning of the 18th c.; but the theory itself, as well as the mysterious problem with which it deals, is as old as philosophy itself: see **EVIL**. The first to consider the question in its integrity was Leibnitz (q.v.). His work *Essais de Theodicée sur la Bonté de Dieu, la Liberté de l'Homme, et l'Origine du Mal*, was pub. 1710. It rose at once to the very highest popularity, and was translated into almost every European language. The leading principle of Leibnitz's vindication of God's goodness is the well-known optimistic theory (see **OPTIMISM**); but he has been followed by several writers in different countries—e.g., Balguy, Werdermann, Kindervater, Creutzer, Benedict Kapp, and many others. Of these writers it may be said, in general, that they have followed the same method, and have addressed themselves to the same view—the reconciliation with the goodness, the holiness, and the justice of the one God, of the existence of those manifold evils, physical or material, as well as moral, which appear in the present order of things. This view is evidently limited to a single problem. But in the discussions of the new philosophic systems, especially that of Hegel, which have arisen in Germany, new difficulties regarding the usual theories about God set forth in Christian writers have arisen out of the rationalistic notions of existence in general. To meet those difficulties, a new theodicy became requisite, and has occupied philosophers, especially in France—see Maret's *Christian Theodicée, or Comparison of the Christian and the Rationalistic Idea of God* (1845); and the discussion by the Jesuit philosopher Père Gratry, in vol. I. of his course of philosophy, *De la Connaissance de Dieu* (Paris 1853). European and American theological works of later years also deal with this theme.

THEODOLITE, n. *thē-ōd'ō-līt* [Gr. *thēāōmai*, I see; *dolichos*, long; also given from *hodos*, a way; *litos*, smooth: the first part of the word is certain: F. *théodolite*]: instrument for measuring angles, used by land-surveyors, especially in trigonometrical surveying. **THEODOLITIC**, a. *-līt'ik*, pert. to a theodolite.—The *Theodolite* is an altitude and azimuth instrument, proportioned and constructed so as to be conveniently portable. Like all instruments in general use, the variations in its construction are almost numberless; but its main characteristics continue unaltered in all forms. It consists essentially of two concentric circular plates of copper, brass, or other material (the upper plate, or *upper horizontal*, either being smaller, and let into the lower, or *lower horizontal*, or the rim of the lower raised round the outside of the upper), moving round a common axis, which, being double, admits of one plate moving independently

THEODOLITE.

of the other. Upon the upper horizontal rise two supports, bearing a cross-bar, which is the axis of a *vertical circle*



Theodolite:

A, B, the horizontal limbs; a, the vernier plate, which turns; C, the vertical axis; D, the ball or socket movement; d, d, spirit-level; E, a magnifier to read off the degrees; F, G, plates held together by the ball D; f, a screw to adjust the level or line of collimation; b, b, b, milled screws to adjust the instrument, and set in level; g, a screw to adjust the telescope laterally; H, a clamping screw, by which means the collar c may be tightened to the axis C, and kept from moving; J, the magnet-box; I, a slow-motion screw, by which the instrument is moved more exactly than could be done by the hand; i, i, clips, to reverse the telescope by screws, j, j.; K, L, frames into which the pivots are placed, on which the vertical arc M is turned round, and on which the telescope is fixed; N, a microscope for reading off the degrees; O, a clamp screw; P, a slow-motion screw, by which the vertical arc and telescope are moved; Q, a milled screw for moving the object-glass of the telescope.—From Cressy's *Encyclopædia of Civil Engineering*.

moving in a plane at right angles to the former. Either this vertical circle has a telescope fixed concentric with it—

THEODORA—THEODORE.

self, or a semicircle is substituted for the circle, and the telescope is laid above, and parallel to its diameter. The circles, as their names denote, are employed in the measurement of horizontal and vertical angles. For these purposes, the outer of the horizontal circles is graduated, and the inner carries the index-point and the Verniers (q.v.); the vertical circle also is graduated, and the graduations are generally read off by means of an index-point and vernier firmly attached to the supports. The upper horizontal is furnished with two levels at right angles to each other, for purposes of adjustment, and has a compass-box let into it at its centre. The stand consists of a circular plate supported on three legs, and connected with the lower horizontal by a ball-and-socket joint; the horizontal adjustment of the instrument being effected by means of three or four (four is better) upright screws placed at equal distances between the plates. The telescope is so fixed as to be reversible, and the numerous adjustments are in great part similar to those of other telescopic instruments. Both horizontal plates being brought, by means of the screws and levels, to a true level, the telescope is pointed at one object, and the horizontal angles read off; it is then turned to another object, and the readings-off from the graduated circle again performed; and by the difference of the readings, the angular horizontal deviation is given; and when vertical angles are required, the readings are taken from the vertical circle in a similar manner.

THEODORA, *thē-o-dō'ra*, EMPRESS: wife of the Eastern Roman emperor Justinian: b. prob. in Constantinople, early in the 6th c.; d. 547. The commonly received story of her life rests on the authority of Procopius, author of a volume of bitterly partisan *Anecdota*. According to Procopius, T. was dau. of a bear-feeder in the amphitheatre of Constantinople; became notorious as an actor in rough farces; was a courtesan in many cities of Asia Minor; and fascinated Justinian, then a senator. When Justinian succeeded to the throne, he was about 44 years of age, and she about 25. As empress she was all-powerful in the state, and not without reason, for in the great insurrection of Nika, 532, she showed herself of a character born to rule; and later she gave many proofs of courage, prudence, and capacity. In the fierce religious controversies of the time, she favored the Monophysites, though her husband stood with the orthodox.—See Procopius, *Anecdota*; for a critical study of the historical sources, see Antonin Débidour, *L'Impératrice Theodora*.

THEODORE, *thē'o-dōr*, King of Abyssinia; otherwise entitled Negus or King of Kings of Abyssinia; original name *Kassai*: 1820–1868, Apr. 13 (reigned 1855–68); nephew of a chief in Amhara, the central province—the others being (see ABYSSINIA) Tigré and Shoa. His mother was left a widow in poverty. T. became distinguished as a soldier against the Turks; wrested the chieftainship from his uncle's sons; defeated Ras Ali, the powerful ruler of Amhara; obtained possession of the person of the titular emperor Johannes; and annexed Tigré. Securing the

favor of the Coptic Church by banishing Rom. Cath. missionaries, he was crowned as Theodore of Abyssinia. He soon conquered Shoa; and then resolved to recover from the Turks the sea-board, formerly Abyssinian. T. showed favor to Englishmen, was desirous to open intercourse with England, and permitted the founding of three Prot. missions. But his ignorance, with his suspicious and jealous temper—always imagining slights and insults—made negotiation with him very difficult; and he soon quarrelled with Eng. diplomacy. In 1862 the Egyptians were advancing within T.'s frontiers; and T. wrote letters to the English and French governments, claiming their protection. That to the queen was delayed on the way, and overlooked after reaching London, and had no answer for two years. The answer to his letter to France was unfortunately worded. T., irritated, threw the Brit. consul and missionaries into prison, and violently maltreated other European residents. After this period (1863) he conducted himself like a madman—causing women and children to be tortured, dishonored, and starved. 'Out of 3,000,000 inhabitants,' says Dr. Blanc (1867), 'he has destroyed more than a third by war, famine, and murder.' After unsuccessful attempts to negotiate with T., followed by his refusal to notice a demand for delivering the prisoners, a Brit. expedition of more than 10,000 soldiers was fitted out at Bombay for invasion of the table-land of Abyssinia; and 1868, Apr., it came within sight of Magdala. Apr. 10, near Magdala, T. gave battle to the Brit. forces, and was defeated. He then surrendered the European captives and retired into Magdala. The place was carried by storm on the 13th with little difficulty. There was no loss of life on the Brit. side, and only a few men wounded; the Abyssinians lost 500 killed and 1,500 wounded; the king himself was found among the dead.—See an article in No. 65, *Westminster Review*, New Series.

THEODORE OF MOPSUESTIA: writer of the Syrian Church, foremost representative of the school of Antioch and notable in the controversy of 'The Three Chapters'. about 350–428 or 9; b. Antioch; of a wealthy and distinguished family. He was school-fellow and friend of St. John Chrysostom, and his fellow-pupil under the philosopher and rhetorician Libanius; and he was induced, by the earnest exhortation of Chrysostom, to join him in entering the monastic life. His theological and scriptural studies were under Flavian of Antioch and Diodorus of Tarsus; and having received priest's orders, he resided at Antioch, where his learning and eloquence won the highest applause; and afterward at Tarsus, under his old teacher Diodorus. About 390, or a little later, he was chosen Bp. of Mopsuestia in Cilicia. In 394 he preached in the presence of Emperor Theodosius at Constantinople, on occasion of a synod held in that city. His literary activity must have been prodigious, if we can judge by contemporary accounts, and by the number of the works ascribed to him, of which only fragments remain. His most important works were commentaries on almost all

THEODORET.

the books of Scripture, and polemical writings. A supposed tendency to Pelagian and Nestorian errors was observable in T., and was in part the occasion of the long controversy of the Three Chapters, which arose long after the death of T. The freedom of his views on the inspiration of the Scriptures, with his divergence on some points of theology, caused his name to be dropped from the list of orthodox writers; though the Syrians have always highly esteemed him. Considerable fragments of T.'s commentaries have been published by Cardinal Mai in *Spicilegium Romanum*, and a very small proportion of his works are extant in Syriac.

THEODORET, *thē-ōd'o-rēt* (L. *Theodoretus*, Gr. *Theodoretos*, given of God): celebrated church historian and theological writer: about 390–457 or later; b. Antioch. He was educated from childhood in a monastery, where, among his fellow-pupils, were Nestorius and John of Antioch, both afterward prominent in the Nestorian controversy. He was admitted among the clergy of Antioch; and in comparative youth became Bp. of Cyrus, a city of Syria. His zeal and eloquence were the theme of universal praise, and his success in bringing unbelievers and heretics to the church was almost unprecedented. In the controversies concerning Nestorius and his doctrines, which followed the condemnation by the council of Ephesus 431, T. for a time took active interest. The party of Nestorius was with difficulty brought to an accommodation with Cyril of Alexandria, in virtue of which the condemnation of Nestorius by the council was acquiesced in by John, Bp. of Antioch. For a time, T. dissented from this condemnation of Nestorius; but afterward saw the necessity of yielding, and concurred in the deposition of those bishops who persisted in rejection of the council of Ephesus. Nevertheless, he did not fully accept the views of Cyril; and when Cyril's successor in the see of Alexandria, Dioscorus, showed a tendency toward Eutychianism (see EUTYCHES: MONOPHYSITES), T. endeavored to induce Dioscorus to abandon such extreme opinions, and composed the work (known in modern controversy by its passage as to the change of the Eucharistic elements) entitled *Eranistes*, or the *Many-shaped*. This work was regarded by Dioscorus as a renewal of the Nestorian error, and he obtained from Emperor Theodosius II. an order confining T. within the limits of his own diocese. The Robber Council (q.v.) of Ephesus, under Dioscorus 449, excluded T. from its sittings, and deposed him from his see; whereupon he was compelled to retire to the monastery at Antioch in which he had received his first education. All this, however, was reversed by the general council of Chalcedon 451. T. did not long survive his restoration. His works, four vols. folio, reprinted in ten parts 8vo by Schulze (Halle 1768–74), consist of commentaries on many books of the Old Test. and the whole of Paul's Epistles; *History of the Church* 325 to 429, in five books; *Religious History*, being lives of the Fathers of the Desert, curious and interesting pictures of early ascetic life; *Eranistes*, dialogue against

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Eutychianism; *A Concise History of Heresies*; also orations, and nearly 200 letters. Of his works, his *History of the Church* is perhaps best known, but is of no great value. His works in dogmatic theol. are of high importance for the doctrinal history of that critical period. All T.'s writings reveal his sincere devotion to an exaggerated and idealized monasticism.—See Schulze's edition of *Theodoret Cyrensis Opera*.

THEODORIC, *thē-ōd'o-rik*, THE GREAT, King of the Ostrogoths: founder of the Ostrogothic monarchy, which comprised Italy, Sicily, s.e. Gaul, Rhætia, Noricum, Pannonia, and Dalmatia: about 454–526, Aug. 30 (reigned 493–526); b. on the banks of the Neusiedler See, s. of Vienna. His father, Theodemir, was one of the three brothers (the other two, Walamir and Widimir) who on the death of Attila (453) freed their nation from the yoke of the Huns, and being the representatives of the royal line of the Amali, exercised a united sovereignty over it; but the death of Walamir, and the departure to Italy and Gaul of Widimir with a part of the nation, left T.'s father sole ruler of the Ostrogoths who remained in Pannonia. Previous to these events, T. had been given as a hostage to the Eastern emperor, in accordance with whose directions he had been accustomed to all kinds of athletic and martial exercises, so that after his return home 473, he was qualified to rule his ferocious and valiant kinsmen, at the death of his father 474. In the previous year the Ostrogoths had obtained parts of Mœsia and Dacia as settlements from Emperor Zeno, and for years they gallantly defended the empire from foreign aggressors, other Gothic tribes included; but the impolitic faithlessness of Zeno produced in revenge the devastation of Thessaly and Macedonia, and subsequently (487) a raid directed on the capital itself. The emperor, to free himself from his troublesome ally, gave T. permission to invade Italy, a suggestion gladly adopted by the warlike ruler, who started for Italy 488; and after forcing his way through the Gepidæ and others who attempted to bar his progress, and gathering recruits on the way, arrived in the summer of 489 on the frontiers of Italy. Odoacer had been forewarned and forearmed; and a desperate conflict between the two powerful armies took place near Aquileia (489, Aug. 28), distinctly to the advantage of the Ostrogoths. A more disastrous defeat was inflicted on Odoacer near Verona (Sep. 30), after which he took refuge in Ravenna; but having again gathered a large force, he was totally routed a third time on the banks of the Adda (490, Aug.), again blockaded in Ravenna, while the whole of Italy was being subdued; and having at last surrendered (493, Feb. 26), was treacherously and disgracefully murdered by T. in the following month. T. now assumed the title *King of Italy*, resisted the claim of suzerainty preferred by the Eastern emperor; and—except a victorious campaign against the Franks, to compel them to cease their assaults on the Visigothic dominions, the suppression of a rebellion in Spain against the authority of the infant monarch (his own grandson Amalric, during whose minority

THEODOSIA—THEODOSIAN.

T. administered also the government of the Visigothic kingdom), and an expedition against the robber-hordes of the Bulgarians—he gave his long reign to the consolidation and development of his new kingdom. His followers received only one-third of the conquered country; the rest was legally secured to the then possessors, and by degrees his barbarous followers were placed on a footing of harmony with their fellow-subjects. T. made Ravenna his capital; occasionally, when his n. frontier was threatened removing to Verona.

T. has a place in the highest rank of monarchs. An uneducated barbarian, and master of a power which even the most formidable of his neighbors, the Franks, could not have long withstood, he showed no thirst for conquest; cultivated the friendship and esteem of the surrounding nations; ruled all classes of his subjects with irresistible authority, but with corresponding justice and moderation; zealously promoted agriculture and commerce till Italy again took its old position as the most prosperous country in Europe; and, himself an Arian, exercised a tolerance of all other sects which they, when their turn for supremacy came, were very far from imitating. The foul blot on his character, besides the treacherous slaying of Odoacer, is the judicial murder of Boëthius (q.v.) and of Symmachus, for supposed connivance with the senator Albinus to restore the authority of the Eastern emperor in Italy; but every fact that can be gathered respecting this outrage indicates that it was the result of a burst of passion, intensified by his extreme, almost morbid, jealousy of Byzantine interference in Italy. The one great error of his administration was his neglect to assimilate his Ostrogothic subjects with the previous inhabitants, either by a common code of laws or by common official preferment; for though, under his sway, the evil of this separation did not appear, yet, when the sceptre fell to weaker hands, an antagonism necessarily arose between the ruling and the subject races, which was the chief cause of the successful restoration of Byzantine authority in Italy by Belisarius (q.v.) and Narses (q.v.). T. left no son; but his third daughter, Amalaswintha, succeeded him as regent for her son Athalaric; the eldest, Theodichusa, having become queen of the Visigoths and mother of Amalric; and the second, Ostrogotha, the wife of Sigismund, last king of the Burgundians.

THEODO'SIA, or FEODO'SIA: see KAFFA.

THEODOSIAN, a. *thē-o-dō'zhan*: pertaining or relating to Emperor Theodosius, or to the code of laws compiled under his direction.

THEODOSIUS.

THEODOSIUS, *thē-o-dō'shī-ŭs*, I., THE GREAT (also THE ELDER, in distinction from his grandson), Emperor of Rome: about 346-395, Jan. 17 (reigned 379-394); son of Theodosius, the great general of the Roman empire, who, after freeing s. Britain from the savage Caledonians who roamed over it at their pleasure, and annihilating the formidable rebellion of the Moor Firmus, which threatened to divorce the African provinces from the empire, was conspired against by his many malicious enemies at court, and summarily beheaded at Carthage 376. T., who had accompanied his father in his British campaigns, and afterward, by routing the Sarmatians, saved Moesia from devastation, retired from active service after his father's murder, and dwelt on his patrimonial lands in Spain. But his abilities were not forgotten at court; and on the defeat and death of Valens (q.v.), his colleague, Gratianus (q.v.), feeling his inability to sustain alone the cares of empire, summoned T. from his retirement, invested him with the imperial purple, and confided to him as joint emperor (379, Jan. 19), the administration of Thrace, Dacia, Macedonia, Egypt, and the East, and especially the protection of the empire against the Goths. This last charge called for the full exercise of the new emperor's abilities, for the army at his command dared not face the Goths in the open field; and even when the Ostrogoths and Visigoths separated after the death of their able leader Fritigern, each breaking up into several bands, T. found it prudent to sow jealousy and dissension among them by promises and bribes; and after a four years' so-called campaign, succeeded in pacifying the Visigoths, the Ostrogoths retreating toward Scythia. The Ostrogoths returned 386, their ranks swelled by Scythians; but were totally routed in attempting to pass the Danube, and the survivors were transported to Phrygia and Lydia. In 387 T. undertook to restore to the throne of the Western empire Valentinian II. (whose sister, Galla, he married), brother of Gratian; and after a uniformly successful contest, the usurper Maximus was captured and put to death at Aquileia. In 392 the suspicious death of Valentinian, and the elevation of the puppet Eugenius by Arbogastes, the real ruler of the West, again summoned T. to interfere; and after two years of preparation, his motley army of Byzantines, Goths, Alans, and Huns, aided by the treachery of some of Eugenius's generals, gained a complete victory over the Gauls and Germans, who chiefly constituted the army of the West; and the two portions of the Roman empire were again united under one ruler. The union, however, lasted only four months, owing to the death of T. T., though professing the orthodox Christian faith, was not baptized till 380, and his behavior after that period stamps him as one of the most cruel and vindictive persecutors who ever wore the purple. His arbitrary establishment of the Nicene faith over the whole empire, the deprivation of civil rights of all apostates from Christianity and of the Eunomians, the sentence of death on the Manicheans and Quarto-decimans (q.v.), all prove this; though lack of evidence for the direct

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execution of these severe laws may somewhat modify our unfavorable judgment, and suggest that, like the massacre at Thessalonica, they were the result of a sudden access of savage passion, carefully fanned by his interested ecclesiastical advisers. His humiliation before St. Ambrose, Bp. of Milan, for the massacre at Thessalonica, was regarded by the church as one of its greatest victories over the temporal power: see AMBROSE.—THEODOSIUS II., surnamed THE YOUNGER (401–450), only son and successor of Arcadius (q.v.), and grandson of T. I., succeeded his father when eight years old, and occupied the throne of the East 42 years. The chief events of his reign were the invasion of the empire by the Huns under Attila, a war with Persia, renewed efforts to extirpate paganism, and the compilation of the *Codex Theodosianus* (see CODE): this emperor was the feeblest of rulers, better adapted for the cowl than for the sceptre and sword.

THEODOTIAN, n. *thē o-dō'shī-an*: in *eccles.* and *chh. hist.*, one of a sect named after Theodotus, tanner in Byzantium, who, apostatizing during a Roman persecution, A.D. 192, palliated his fall by representing that the Lord Jesus, notwithstanding his miraculous conception, was only a man; and that therefore he, in denying Christ, had denied a man and not God. The name was given also to followers of another Theodotus, disciple of the former, who organized the sect (called also Melchisedicians) 210, and who held that Jesus, though born a man, became God at his baptism. Some of Theodotus's followers thought that Jesus became so at his resurrection, and others that he was never so.

THEOGONY, n. *thē-ōg'ō-nī* [Gr. *thēōgōnīa*—from *thēōs*, a god; *gonē*, race, progeny]: the generation or genealogy of the gods; that branch of heathen myth. which taught the genealogy of their deities; one of a class of poems in which the ancient Greeks recounted the genealogy of the gods. The earliest is said to have been written by *Musæus* (q.v.); but his work, as well as the Theogonies of Orpheus (q.v.) and others, has perished; that of Hesiod (q.v.) being the only one that has come down to us. THEOGONIST, n. *-nist*, one who writes on theogony. THEOGONICAL, a. *thē'ō-gōn'ī-kāl*, pertaining to theogony.

THEOLOGY, n. *thē-ōl'ō-jī* [Gr. *theōlōgīa*, theology—from *thēōs*, a god; *logos*, discourse: F. *théologie*]: science which treats of God and divine things; divinity (see below). THEOLOGIAN, n. *thē'ō-lō'jī-ān*, one versed in the science of divine things. THEOLOGICAL, a. *-lō'jī-kāl*, pert. to the science of divine things. THEOLOGICALLY, ad. *-lī*. THEOLOGIZE, v. *thē-ōl'ō-jīz*, to render theological. THEOLOGIZING, imp. THEOLOGIZED, pp. *-jīzēd*. THEOLOGIST, n. *-jīst*, one versed in theology.—*Theology* is the theory of the divine nature and operation. The term occurs first in Plato and Aristotle, denoting the doctrine of the Greek gods and of their relation to the world. Homer, Hesiod, Orpheus, etc., are called *theologoi* (theologians), from the subject of their verse. But their T. is called 'mythic,' in distinction from the 'physical' T. of the philosophers, which, reversing

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the mythic order, concerned itself with speculative inquiries regarding the origin of the world and its relation to the gods. In the New Test. the word T. does not occur, and the idea seems alien to the simplicity of the primitive faith in the Lord Jesus Christ. The Greek Christians originally designated any deep philosophical apprehension of the truths of religion by the term *Gnosis* (knowledge), as distinguished from *Pistis* (faith), the simple irreflective trust of the majority of humble believers. First during the 3d and 4th c. the word T. came into use, especially in connection with such of the Fathers as defended the doctrine of the Deity of the Logos. In this sense, the evangelist John and Gregory of Nazianzen were termed *Theologians*. During the same period, the word T. was applied to the doctrine of the Trinity. In the 5th c. its application was widened by Theodoret (q.v.), who used it to denote the whole circle of theoretical instruction in religion; and finally, Abelard, through his *Theologia Christiana*, gave the word that comprehensive signification which it still bears, as expressive not only of a theoretical but also of a practical exposition of religious truth.—See NATURAL THEOLOGY.

THEOMACHY, n. *thē-ōm'ă-kĭ* [Gr. *thēōs*, a god; *machē* a battle]: in *anc. myth.*, a fighting against the gods, as the mythological battle of the giants with the gods. **THEOM'ACHIST**, n. *-kĭst*, one who fights against the gods.

THEOMANCY, n. *thē-ō-măn-sĭ* [Gr. *thēōs*, a god; *manteia*, divination]: a kind of divination drawn from the responses of oracles.

THEOPATHY, n. *thē-ōp'ă-thĭ* [Gr. *thēōs*, a god; *pathos*, feeling or suffering]: sympathy with the divine nature; capacity for religious affections or worship; religious feeling; piety. **THEOPATHETIC**, a. *thē-ō-pă-thĕt'ĭk*, or **THE'OPATH'IC**, a. *-ĭk*, of or pertaining to.

THEOPHANY, n. *thē-ōf'ă-nĭ* [Gr. *thēōs*, a god; *phainesthai*, to appear]: a manifestation of God to man by actual appearance. **THE'OPHAN'IC**, a. *-ō-făn'ĭk*, of or pertaining to.

THEOPHILUS, *thē-ōf'ĭ-lŭs*: legendary precursor of Doctor Faust (see **FAUST**) in the forming of a compact with Satan; reputedly a coadjutor-bp. at Adana, in Cilicia. After the death of his bishop, being unanimously chosen successor, he declined the honor; but was shortly afterward, at the instigation of slanderers, deposed from his former office by the new bishop. He then had recourse to a Jew magician, who took him to a midnight meeting of devils, whose chief ordered him to deny Christ and the Virgin Mary, and to give a bond making over his soul: the result was, that next morning he was reinstated in his office and dignities by the bishop; and presuming on the support of his infernal confederates, he assumed a supercilious and domineering manner. But he was soon overtaken with remorse, and, through 40 days' fasting and prayers, prevailed on the Virgin Mary to intercede with her son for him, and to get back the letter from the devil, which she laid upon the breast of the repentant sinner, as he lay asleep in the

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church. T. then made public confession of his crime, told of the goodness of the Virgin Mary, and died three days afterward. This legend, whose origin is traced back to an unknown Greek, Eutychianus, was brought, during the 10th c., through an equally unknown Neapolitan priest, Paulus, to the West, where it quickly spread far and wide. Before the end of the century, it was put into Latin verse by Roswitha, and, still better, by the Bp. of Rennes (d. 1123)—see *Acta Sanctorum*, Feb. 4; and *Hildeberti Turonensis et Marbodi Opera*, pub. by Beaugendre, Par. 1708. The legend—poetized and dramatized from the 10th to the 15th c.—has in various versions been translated into several languages; and frequent allusions to it occur in Latin, German, Anglo-Saxon, Icelandic, Swedish, French, and even Spanish literature. It has even been pictorially represented in French churches. Through the rescue of the repentant sinner by the Virgin Mary, this Rom. Cath. legend differs essentially from the stern Protestant shape of the devil's compact in the Faust-book, which, with rigorous consistency, requires the consignment of the contracting party to hell.

THEOPHRASTUS, *thē-o-frās'tūs*: Greek moralist and naturalist, successor of Aristotle in the Peripatetic school: b. at Eresus, in Lesbos, conjecturally between B.C. 373 and 368; d. B.C. 288. He studied philosophy at Athens, first under Plato; subsequently under Aristotle, who took especial interest in him. To T., moreover, Aristotle bequeathed the presidency of the Lyceum, his library, and the original MSS. of his writings. T. proved a worthy successor of the Stagirite. Under his presidency of 35 years the Lyceum attracted no fewer than 2,000 disciples, among whom was the comic poet Menander. The kings Philip-pus, Cassander, and Ptolemy held him in high esteem; and such was the admiration of the people of Athens for him, that, when he was arraigned for impiety, and triumphantly acquitted, they would have killed his accuser, had he not generously interceded. In compliance, however, with the law of Sophocles, which decreed the banishment of all philosophers from Athens, T., B.C. 305, left the city, until the enactment was repealed the next year by Philo, also a disciple of Aristotle. On the eve of dissolution, he is said to have complained of the shortness of human life, which was ending with him just when he was about to solve its enigmas. He sought to develop the Aristotelian system, to explain its obscurities, and to fill its gaps. Of his works only the following remain: 1. *Characteres*, descriptive of vicious characters; 2. *Of Sensuous Perception and its Objects*; 3. A fragment on *Metaphysics*; 4. *Of the History of Plants*, one of the earliest of extant treatises on botany; 5. *Of the Causes of Plants*; 6. *Of Stones*. The best complete ed. is that of Schneider; there are numerous eds. of the *Characteres* separately.

THEOPNEUSTY, n. *thē'ōp-nūs'tī* [Gr. *theopneustos*, inspired by a God—from *thēōs*, a god; *pnēō*, I breathe]: divine inspiration. **THE'OPNEUS'TIC**, a. *-tīk*, given by the inspiration of the Spirit of God.

THEOREM—THEORY.

THEOREM, n. *thē'ō-rēm* [L. and Gr. *thēōrēmā*, a theorem—from Gr. *thēōrēō*, I look at—from *thea*, a view: F. *théorème*: It. *teorema*]: universal demonstrable proposition; specifically, in *math.*, something laid down as a truth which is to be proved by a chain of reasoning, as distinguished from a problem or something which requires solution; in *alg.* and *analysis*, a rule or statement of relations expressed in a formula or by symbols, as the binomial theorem, Boole's theorem. **THEOREMATIC**, n. *thē'ō-rēmāt'ik*, or **THEOREM'IC**, a. *-ō-rēm'ik*, pertaining to or comprised in a theorem.

THEORY, n. *thē'ō-rī* [Gr. *thēōrīa*, an inspection—from *thēōrēō*, I look at—from *thea*, a view: F. *théorie*]: a doctrine or scheme of things terminating in speculation and without a view to practice; the abstract principles of any art considered without reference to practice; the opposite of practice; the science, distinguished from the art; the philosophical explanation of phenomena, either physical or moral; a scheme or system founded on inferences drawn from certain principles, or from the particular arrangement of certain facts (see below). **THEORETIC**, a. *thē'ō-rēt'ik*, or **THEORET'ICAL**, a. *-ī-kāl*, pert. to theory, or depending on it; not practical; speculative. **THEORET'ICALLY**-ad. *-kāl-lī*. **THEORIC**, n., or **THEORIQUE**, n. *thē'ō-rīk*, in *OE.*, speculation; theory. **THEORIZE**, v. *-rīz*, to form a theory; to speculate. **THEORIZING**, imp. **THEORIZED**, pp. *-rīzd*. **THEORIZER**, n. *-rī-zēr*, one who indulges in theory rather than in practice; a theorist. **THEORIST**, n. *-rīst*, one who forms theories; one given to speculation.—*Theory* denotes the scientific process of generalization under various aspects.

T. is, in the first place, opposed to Fact, or matter of fact, and signifies that a certain class of facts have been generalized and brought into a single comprehensive statement: it thus corresponds to a Principle, general truth, or Law of Nature. That a half-inflated bladder hung before the fire is expanded till it bursts, is a matter of fact; that bodies generally are expanded by heat, is the T. or general principle, comprehending the whole class of facts. To give the T. of a fact, in this sense of the word, is to give its general law; this is called also its Explanation, sometimes its Cause: see **CAUSE**.

T. is, in the next place, distinguished from Hypothesis (q.v.). A fact may, for a time, be referred to a hypothetical or assumed principle; endeavors being meanwhile made to remove the hypothetical character, by proving or disproving the principle. The 'vortices' of Descartes was a hypothesis to account for planetary motions; while Newton's view, that gravity might be the cause of these motions, was, in the first instance, a hypothesis. The Cartesian doctrine (hypothesis) was disproved and abandoned; the Newtonian was fully verified, and, ceasing to be a hypothesis, became a theory.

T. is, lastly, distinct from Practice. The T. of a subject is the knowledge or explanation of it; the Practice is making some use of it. Physiology is T.; Physic, or Medicine,

is practice. In practical matters, there are two modes of procedure further illustrative of the distinction now in hand. The knowledge possessed by a worker in any art may be empirical, experimental, rule-of-thumb—i.e., it may be gathered by actual experience in the particular operation: the seaman's knowledge of the prognostics of weather, and the cook's art in boiling and roasting, are usually of this kind. On the other hand, the worker's knowledge may be obtained from T., in other words, from general principles or laws scientifically ascertained; as when the T. of the winds and the law of storms are employed to predict the weather; when the cook roasts and boils according to the known temperature for coagulating albumen; and when a physician prescribes a dietary grounded on chemical analysis of the food and of the tissues to be maintained. Great caution is requisite in employment of such theoretical knowledge in the arts and in practical affairs. It is not enough that the theories are fully established; we must also know the conditions of the case, so far as to allow for every agent operating to produce or to mar the effect. That a cannon-ball should describe a parabola, is a correct theoretical inference from gravity and the laws of motion; but the resistance of the air, a distinct agency, makes it untrue in fact, therefore misleading in practice. When this resistance is allowed for, the T. is complete, and its application will no longer disappoint the operator. See DEDUCTION.

THEOSOPHY, n. *thē-ōs'ō-fī* [Gr. *thēōsophia*, divine wisdom—from *thēōs*, a god; *sophia*, wisdom; *sophos*, wise]: *literally*, divine wisdom; knowledge of divine things; a philosophy which professes a direct, as distinguished from a revealed, knowledge of God, supposed to be attained by extraordinary illumination; supposed direct intercourse with God and spirits (see below). THEOS'OPHIZE, v. *-fiz*, to practice theosophism. THEOS'OPHISM, n. *-fizm*, theosophy, or a process of it. THEOS'OPHIST, n. *-fist*, believer in theosophy. THEOSOPHIC, a. *thē-ō-sōf'ik*, or THE'OSOPH'ICAL, a. *-i-kāl*, pertaining to theosophy.

THEOSOPHY, *thē-ōs'ō-fī* [Gr., wisdom concerning God]: knowledge of God by direct illumination, and without logical system and support as in theology. It differs from Philosophy in that it starts from a transcendental apprehension of deity to explain the universe, and does not generalize from phenomena to the being and attributes of God; and it differs from Mysticism (q.v.) in that it does not content itself with the relations of the soul to God, but speculates on the constitution and course of nature. It tends toward a pseudo-philosophy (rarely a formal philosophy) of man and the universe; also toward a pretentious show of ontology, including that of the Divine nature, which, however, may be reduced to nothing that answers any idea of God, but rather to pantheism. The use of the word is very loose; it has been employed to designate a wide variety of claims, opinions, and practices—the mean and the noble—from the atheistic fatalism and pessimism of Buddhism (q.v.) to the overwise subtleties of Neoplaton-

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ism (q.v.) and the Gnostics (q.v.); from these to intrepertative puerilities of the Cabala (q.v.), the doctrines of Paracelsus (q.v.) and of the Rosicrucians (q.v.), the magical arts of the middle and other ages, the visions of Swedenborg (q.v.) and that which has been regarded as the more typical theosophy as well as mysticism of Eckhart (q.v.) and Böhme (q.v.).—Of late, the word has been applied specifically to an affectation of Buddhism, which, so far as it is a philosophy, is a vague ontology, and more especially to a vaporous claim of superior and occult wisdom put forth by the late Madame Blavatsky (q.v.), Col. Olcott, A. P. Sinnett, and others. Madame Blavatsky's crude and incoherent *Isis Unveiled* reveals nothing whatever. Col. Olcott's *Theosophy, Religion, and Occult Science*, described as 'a howling menagerie of mixed metaphors,' asserts two sublimer states of matter, and—with a Hindu coloring—the human double, which, owing to varying conditions, may exist as invisible, or a vapor, or more solid and tangible. The miracles of communication with spirits by Madame Blavatsky were (it is claimed) exposed by missionaries, by her confederate Madame Coulcomb, and by Richard Hodgson, agent of the London Soc. of Psychical Research. Mrs. Annie Besant's London lecture, 1891, promising an exposition of T. in its recent Buddhist dress, proved to be a series of commonplaces about planes of existence and man's complex nature, such as are common property of all non-materialistic views.

The first theosophical society was formed in New York in 1875 with less than 12 adherents by Madame Blavatsky (q.v.), who advocated a review of Sanskrit, Pali, Zend, and other ancient literatures as containing truths of highest value, and proposed to organize a society which should be the nucleus of a universal brotherhood of humanity, to promote study of Aryan and Oriental literatures, religions, and sciences. In 1884 the soc. was invited to England, where a branch was formed with A. P. Sinnett, author of *The Occult World*, as pres. India is quite generally accepted by its advocates as the true home of the system, whose adherents now number more than 100,000. In its modern phase T. is a system that claims to embrace the essential truth underlying all systems of philosophy, religion, and science, and hence to be the one universal religion. Its doctrines may be embraced in three affirmations: (1) Underlying all manifestation is the infinite, eternal, immutable principle, known only through its manifestations, spiritual and material. This impersonal, inscrutable, infinite principle of life and being is the theosophist's highest conception of a Supreme Being. (2) A unity of consciousness, and also a unity of law, runs throughout the universe, embracing the physical, psychic, mental, and moral planes. (3) The essential divinity is in man, and the progression of the divine ray passes through all the kingdoms of nature up to man, and beyond man as we know him, up to beings of godlike perfection, the evolution taking place by means of successive re-embodiment or reincarnation, and according to the law of cause

THEOTHECA—THERAPEUCY.

and effect. The system will thus be seen to be essentially pantheistic, and in the statements of its more recent defenders is largely a reproduction of Buddhism with adaptation to modern philosophical and scientific phrase and habits of thought. Great prominence is given to the doctrine of metempsychosis, or transmigration of souls (q.v.), and to the belief in a spiritual or 'astral' body, which, even in life, may be separated from the material frame, may make distant journeys, discoveries, and communications, may appear to persons who have the gift of seeing it in any part of the world, may suspend the functions of life even through prolonged burial, and resume them again at will. See MAHATMAS.

THEOTHECA, n. *thē-o-thē'ka* [prefix *theo-*: Gr. *thēkē*, a case, a receptacle]: same as **MONSTRANCE** (q.v.).

THEOTOKOS, n. *thē-ōt'o-kōs* [Gr. *theotokos*, bringing forth or giving birth to God; *theos*, God; *tokos*, bringing forth]: in *chh. hist.* and *theol.*, a title of the Virgin Mary, adopted at the councils of Ephesus, 431, and Chalcedon, 451.

THERA, *thā'rá*, or **SANTORIN**, *sân-to-rēn'*; island in the Grecian archipelago, the most southerly of the Cyclades; 41 sq. m. It possesses extraordinary geological interest on account of the volcanic transformations of which it has been the theatre. The whole island is simply one side of a vast crater, the other side of which has sunk into the sea: from the site of the ancient centre of volcanic energy small islands have at different times been raised, the last in 1866. Many volcanic convulsions have been witnessed and recorded in T. during historic time; e.g., B.C. 198, A.D. 1573, A.D. 1710, besides the occurrences of 1866, when two small islands emerged. The soil is exceedingly fertile. The wine of Santorin (*vino santo*) is of most excellent quality. Pop. 12,000.

THERAPEUCY, n. *thēr-a-pū'sī*: same as **THERAPEUTICS** (q.v.).

THERAPEUTÆ—THERAPIA.

THERAPEUTÆ, *thěr-â-pũ'tē*: pious 'Jewish' sect, mentioned in a book ascribed to Philo, as living chiefly around Lake Mareotis, near Alexandria, but as having also numerous colonies in other parts of the world. They are described as in many respects like the Essenes (q.v.). Like them, they lived unmarried in a kind of monastery, were very moderate in food and dress, the latter being a white garment; prayed at sunrise, their face turned to the sun; studied much in the Scriptures—which they explained allegorically—and in other 'ancient books,' and were opposed to slavery. The chief differences between these and the Essenes, 'as described to us, consisted in the T. simply living a life of contemplation, while the Essenes followed many occupations, such as agriculture, arts, etc.; the latter lived together, while the T. lived separately in their cells; the Essenes not only took an interest in other human beings, but actively assisted them; while the T.—who also, before they entered the brotherhood, divided their property among their relatives, contrary to the 'common treasure' of the Essenes—kept themselves in utter ignorance of the outer world. Again, the T. knew none of the divisions which marked the degrees of initiation among the Essenes, but they held the Temple at Jerusalem in much higher veneration than the latter; the T. brought up boys to the brotherhood, while the Essenes recruited themselves from grown-up people only. One of the chief characteristics of the T. was their religious meal in common on every seventh Sabbath; the Essenes having two such sacred meals daily. Many and striking are the analogies offered by their mode of life and their doctrines to those of the Pythagoreans; e.g., neither partook of animal food or wine; both admitted women to their assemblies; and both held the number seven sacred. Many theories have been broached regarding this mysterious sect. One of the most plausible notions is the one—now commonly accepted—that the book *De Vita Contemplativa*, which treats of this sect, has been falsely attributed to Philo. It is believed to be the work of an early Christian, intended to idealize the life of Christian monasticism and asceticism of the first centuries. See **ESSENES**.

THERAPEUTICS, n. *thěr'â-pũ'tiks* [Gr. *therapeu'tikōs*, having the power of healing—from *therapeu'ein*, to take care of, to heal: F. *thérapeutique*; It. *terapeutica*]: that department of medicine which relates to the discovery and application of rémedies for diseases, including the action of remedies on the diseased animal system, or the means of aiding nature in return to health. **THER'APEU'TIC**, a. *-tík*, or **THER'APEU'TICAL**, a. *-tĩ-kāl*, curative; pertaining to the healing art. **THER'APEU'TICALLY**, ad. *-lĩ*. **THER'APEU'TIST**, n. *-tĩst*, one who studies or is versed in therapeutics.

THERAPIA, *těr-â-pě'â*, or **TARAPIA**, *tâ-râ-pě'â*: small Turkish town on the Bosphorus, 21 m. n.n.e. of Constantinople, at the head of the large and beautiful bay of T.; one of the most charmingly picturesque spots in the neighborhood of the Turkish capital, and with a deliciously cool summer climate. T. is the residence of the French and English embassies, and many Frankish merchants.

THERAPONIDÆ—THERIACA.

THERAPONIDÆ, *thēr-a-pōn'ī-dē*: a family of acanthopterous fishes, allied to *Percidæ*, from which they are distinguished by having 6 instead of 7 branchiostegal rays. The scales in some are ctenoid, in others cycloid. Some are fresh-water fishes. Some are found in the lakes and rivers of N. America.

THERE, ad. *thār* [AS. *thær*; Icel. *thar*; Dan. and Sw. *der*; Dut. *daar*, there]: in that place; in the place most distant; opposite to *here*, in this place; a word used as a mere introductory particle at the beginning of a sentence, adding to it a peculiar and idiomatic emphasis, which can hardly be explained; *there* serves to throw the nominative after the verb, as 'a man was,' '*there* was a man'; in composition, *there* has the force of *that*, as *thereby*, which means 'by that.' **THERE'ABOUT**, ad. *-ā-bowt*, or **THERE'ABOUTS**, ad. [*there*, and *about*]: near that place; near that number or degree; concerning that matter; approximately. **THERE-AFTER**, ad. *-āftēr* [*there*, and *after*]: according to that; accordingly. **THEREAT**, ad. *-āt* [*there*, and *at*]: at that; at that thing or event. **THERE'BY**, ad. *-bī* [*there*, and *by*]: by that means; in consequence of that. **THEREFOR**, ad. *-fōr*, for that; for this; for it. **THEREFORE**, ad. and conj. *thēr'fōr* [*there*, and *for*]: for that or this reason; referring to something previously stated; consequently; in return for this or that. **THEREFROM**, ad. *thār-frōm* [*there*, and *from*]: from this or that. **THEREIN**, ad. *-īn* [*there*, and *in*]: in that or this place, time, or thing. **THEREINTO**, ad. *-īn-tō* [*there*, and *into*]: into that, or that place. **THEREOF**, ad. *-ōf* [*there*, and *of*]: of that or this. **THEREON**, ad. *-ōn* [*there*, and *on*]: on that or this. **THEREOUT**, ad. *-owt* [*there*, and *out*]: out of this or that. **THERETO**, ad. *-tō* [*there*, and *to*], or **THEREUNTO**, ad. *-ūn-tō*, to that or this. **THEREUPON**, ad. *-ūp.ōn* [*there*, and *upon*]: upon that or this; in consequence of that; immediately. **THERewith**, ad. *-with* [*there*, and *with*]: with that or this; forthwith. **THEREWITHAL**, ad. *with-awl*, over and above; with that or this.

THEREANENT, ad. *thār'a-nēnt* [Scot.]: concerning that; as regards or respects that matter or point.

THERE'SA, SAINT: see **TERESA**.

THERESIOPEL, *tī-rā-zē-ō'pēl*, usually **MARIA-THERESIOPEL** (Hung. *Szabadka*): important town in the Hungarian county of Bacs, 24 m. w.s.w. of Szegedin, on the Palitsch Lake. It is well built, but unpaved; contains numerous important buildings, as the churches, gymnasium, and the great barracks. Manufactures of leather and shoes, linen-weaving, dyeing, cultivation of tobacco and fruits, with rearing of cattle, are chief industries. Pop. (1900) 82,122.

THERIACA, n. *thēr'ī-ā-kā* [L. *thērīāca*; Gr. *thērīākē*, an antidote against the bite of serpents, or poison—from *thērīōn*, a wild beast]: formerly, a medical remedy for the bite of serpents, or for poison; medical name for molasses or treacle [the Eng. word treacle is a corruption of *theriacal* which had come to mean medicinal—treacle being named from its resemblance in appearance to the theriaca of *Andromachus*]. **THERIACA ANDROMACHI**, *ān-ārōm'ā-kē*, fa-

THERIAKIS—THERMIC FEVER.

miliarly known as Venice treacle, an electuary of about 70 ingredients, invented by Andromachus of Crete, physician to Nero, and in repute till recently—so that not many years ago in Venice, Holland, France, and other countries, druggists had to prepare the compound with solemnities in the presence of the magistrates.

THERIAKIS, n. plu. *thě'rĭ-ă-kĭz*: the opium-eaters of Turkey.

THERIODONT, n., *thěr'ĭ-ō-dŏnt* [Gr. *thēreĩōs* savage—from *thēr*, a wild beast; *odous*, or *odonta*, a tooth]: in *palæon.*, one of an extinct order of reptiles, named in allusion to the mammalian character of their teeth.

THERMAL, a. *thěr'măl*, sometimes THER'MIC, a. -*mĭk* [Gr. *thermos*, warm—from *therō*, I warm: F. *thermal*: It. *termale*]: of or pertaining to heat; warm—applied to springs above 60° Fahr. THERMAL CAPACITY, the amount of heat required to increase the temperature of a body one degree.

THERMIC FEVER, *thěr'mĭk*; popularly SUNSTROKE (otherwise called *Heat Apoplexy*, *Heat Asphyxia*, *Coup de Soleil*, *Erythismus tropicus*, and *Insolatio*): often fatal affection of the nervous system; very common in India and other tropical countries, and, during hot summers, in the United States and other temperate lands. The symptoms are greatly modified in different cases. In some there is tendency to fainting (*Heat Syncope*); in others the symptoms are apoplectic (*Heat Apoplexy*); in still others the characteristic feature is the excessive development of heat (*Hyperpyrexia*) to 110° F. or higher. In the first case (syncope), there is danger of heart-failure, and the patient should be laid in recumbent position, stimulants administered, and friction of the extremities applied. But where the symptoms are rather those of apoplexy or of hyperpyrexia, the most successful results are obtained by employment of cold (pouring cold water over the bodily surface, rubbing the surface with ice, injection of iced water). If, the temperature having been thus lowered, unconsciousness continues, the hair must be cut as short as possible, and the nape of the neck blistered. If insensibility recurs after 10 or 12 hours, a blister should be applied to the crown of the head, the extremities and chest should be stimulated with mustard poultices. Immediately after the douche, there should be thrown up the lower bowel, through a long stomach-pump tube, a strong purgative injection (e.g., a mixture of an ounce and a half each of castor-oil and oil of turpentine, and two drams of tincture of asafetida in about half a pint of barley-water). Under no circumstances should there be any abstraction of blood. The preventive measures are more important than the treatment, and are: wearing loose clothing; personal cleanliness by frequent ablution; avoidance of all excesses; drinking cooled water in small quantities at frequent intervals. In the cases that terminate favorably, gradual remission of the symptoms takes place; and when the skin becomes cool and moist, and sleep has been procured (usually within 36 hours of the attack), the patient may be regarded as out of danger.

THERMIDOR—THERMOBAROMETER.

The predisposing causes are: (1) unusually high temperature, with great dryness of the air; (2) the electrical condition of the atmosphere that precedes a thunder-storm; (3) a contaminated atmosphere from overcrowding; (4) all debilitating causes, such as prolonged marches, previous disease, intemperate habits, etc. The mortality is about 50 per cent. There was extraordinary mortality from sunstroke in the United States in the hot summer of 1881: of 583 deaths occurring in little more than a week in Cincinnati, 314 were reported due to sunstroke and other heat-effects.

THERMIDOR, n. *thèr'mĩ-dŏr* [F.—from Gr. *thermos*, warm]: eleventh month of the calendar of the first French republic, from July 19 to Aug. 18 (see **CALENDAR**). The 9th Thermidor of the republican year 2 (1794, July 27) is historically memorable as the date of Robespierre's fall, and the end of the Reign of Terror (q.v.). The name Thermidorians was given to all those who took part in this fortunate *coup d'état*, but particularly to those desirous of restoring the monarchy.—See Duval's *Souvenirs Thermidorians* (2 vols. Par. 1844).

THERMO, *thèr'mō* [Gr. *thermos*, warm]: common prefix in many scientific terms, denoting 'connected with or derived from heat.' **THERMO-DYNAMICS**, branch of physical science dealing with the conversion of heat into energy, and of energy into heat (see below). **THERMO-ELECTRICITY**, electricity developed by the unequal heating of metallic substances; branch of the science of electricity which treats of the currents that arise from heating the junction of two heterogeneous conductors (see **ELECTRICITY**). **THERMO-ELECTROMETER**, instr. for ascertaining the dissimilar heating power of an electric current.

THERMOBAROMETER, *thèr-mō-bă-rŏm'ĕ-tèr* [Gr. *thermos*, warm, and *barometer*]: instrument for measuring altitudes according to the boiling-point of water. It consists of a metallic vessel for boiling water, fitted with very delicate thermometers graduated only from 80° to 100° centigrade (176°—212° F.); so that each degree occupying considerable space on the scale, even hundredths of a degree may be noted: thus it is possible to determine the altitude of a given place within about 10 ft.—The name T. is given also to a form of siphon barometer having its two wide legs united by a narrow tube: when this barometer is placed in reversed position it serves as a thermometer, the sealed leg acting as the bulb of a thermometer.

THERMO-DYNAMICS.

THERMO-DYNAMICS, *thér'mō-dī-nām'iks*, or the **DYNAMICAL THEORY OF HEAT**: literally, merely the science of the relations of heat and work; but often generally denoting the whole science of Energy: see **ENERGY**: **FORCE**: **WORK**. The following is an outline of this grand modern generalization, mostly supplementary to that in the article above referred to.

Energy is strictly defined as the power of doing Work (q.v.), and is of one or other of two kinds—*Potential* or *Kinetic*. A raised weight, a wound-up spring, gunpowder, and the food of animals, are instances of stores of potential energy. A missile in motion, wind, heat, and electric currents are instances of kinetic energy. Sound, light, and other forms of wave-motion (see **WAVE**), all are instances of mixed potential and kinetic energy.

The modern theory of Energy contemplates its

CONSERVATION,
TRANSFORMATION, and
DISSIPATION.

The phrase **CONSERVATION OF ENERGY** is the statement of the experimental fact, that Energy is, like Matter (q.v.), indestructible and uncreatable by any process at the command of man. See **DYNAMICS**.

The phrase **TRANSFORMATION OF ENERGY** (or **Correlation of Forces or Energies**) is the statement of the experimental fact, that any one form of energy may in general be transformed wholly or partially into any other form. But it is subject to the condition derived from the first fact, that the portion transformed retains its amount unchanged. It is subject also to the law of **DISSIPATION**, or **Degradation**, which is a statement of the experimental fact, that Energy generally tends at every transformation to at least a partial transformation into heat; and that, when in that form, it tends to a state of uniform distribution, in which no further transformation is possible.

The original energy of the universe, therefore, though still of the same amount as at creation, being in a state of ceaseless transformation, has been in great part frittered down into heat, and will at length take wholly that final form.

In the grand discoveries here briefly summarized, Newton took the first great step. In a Scholium to his third law of Motion (q.v.), he lays down in a few words the Conservation of Energy as embodying the experimental results known in his day with reference to forces and visible motions. Near the end of the 18th c. Rumford (q.v.) and Davy (q.v.) attempted to determine the 'Mechanical Equivalent' of heat—i.e., the quantity of heat equivalent to a given amount of mechanical work. But though the Dynamical Theory of Heat was thus really founded in 1799, it was not generally received. The first to recall attention to it was Séguin, nephew of Montgolfier (from whom he states that he derived his views), who 1839 distinctly enunciated the equivalence of heat and mechanical work. In 1842, Mayer enunciated the Conservation of Energy as a metaphysical deduction from the maxim, *Causa æquat effect-*

rum. He made no experiments to prove this general statement, but he made a calculation of the mechanical equivalent of heat from the specific heats of air—assuming that when heat is produced by compression, its amount is the equivalent of the work spent in compressing. His result was erroneous because his data were imperfect. But it appears that his assumption, quite unwarranted as it was, is really very nearly true for air. In 1843, Colding, led also by some metaphysical speculations, propounded the doctrine, but endeavored to base it on actual experiments.

Finally, Joule (q.v.), 1843, published an experimental determination of the mechanical equivalent of heat (770 foot-pounds as the work required to heat a pound of water one degree F.), which is within two per cent. of the most trustworthy results since obtained (772 foot-pounds). Joule had been, since 1840 at least, making quantitative determinations of equivalence between various forms of energy; and was led to propound the general law of Conservation of Energy by the only legitimate process—viz., experiment, as contrasted with metaphysical assertions of what ought to be. The complete foundation of the science on a proper basis is thus due to him; though, as we have seen, portions of it were established thoroughly by Newton, by Rumford, and by Davy.

Before we consider the principal features of the theory as now developed, it is necessary to refer to the investigations of Fourier and Carnot, which, though in some respects defective, were real advances. Fourier's great work, *Théorie de la Chaleur*, is devoted to the laws of conduction and radiation, i.e., to the dissipation of heat, and is one of the most remarkable mathematical works ever written. Carnot's work, *Sur la Puissance Motrice du Feu*, is the first in which any attempt is made to explain the production of work from heat. It is unfortunately marred by his assumption that heat is a material substance, though it is only fair to say that he expresses doubt of this hypothesis.

(The following notice of Carnot is from a paper by Sir W. Thomson (q.v.) in *Transactions of the Royal Society of Edinburgh*, 1849.)

He begins his investigation by premising the following correct principle, neglected by many subsequent writers: 'If a body, after having experienced a certain number of transformations, be brought identically to its primitive physical state as to density, temperature, and molecular constitution, it must contain the same quantity of heat as that which it initially possessed.' Hence he concludes, that when heat produces work, it is in consequence of its being *let down* from a hot body to a cold one, as from the boiler to the condenser of a steam-engine. His investigation, though based on an erroneous hypothesis, is extremely ingenious, and forms the foundation of the modern theory. In this sketch of it, preparatory to an account of the present state of the theory, a somewhat hypothetical case is chosen, as simpler than the most common practical one. This is the case of a piston working air-tight in a cylinder closed at the bottom.

Suppose we have two bodies, A and B, whose temperatures, S and T, are maintained uniform, A being the warmer body, and suppose we have a stand, C, which is a non-conductor of heat. Let the sides of the cylinder and the piston be also non-conductors, but let the bottom of the cylinder be a perfect conductor; and let the cylinder contain a little water, nearly touching the piston when pushed down. Set the cylinder on A; then the water will at once acquire the temperature S, and steam at the same temperature will be formed, so that a certain pressure must be exerted to prevent the piston from rising. Let us take this condition as our starting-point for the cycle of operations.

1. Allow the piston to rise gradually; work is done by the pressure of the steam, which goes on increasing in quantity as the piston rises, so as always to be at the same temperature and pressure. And *heat is abstracted from A*, namely, the latent heat of the steam formed during the operation.
2. Place the cylinder on C, and allow the steam to raise the piston further. More work is done, more steam is formed, but the temperature sinks on account of the latent heat required for formation of the new steam. Allow this process to go on till the temperature falls to T, the temperature of the body B.
3. Now, place the cylinder on B; there is of course no transfer of heat; because two bodies are said to have the same temperature when, if they be put in contact, neither parts with heat to the other. But if we now press down the piston, we do work on the contents of the cylinder, steam is liquefied, and the latent heat developed is at once absorbed by B. Carry on this process *till the amount of heat given to B is exactly equal to that taken from A* in the first operation, and place the cylinder on the non-conductor C. The temperature of the contents is now T., and the amount of caloric in them is precisely the same as before the first operation.
4. Press down the piston further, till it occupies the same position as before the first operation; additional work is done on the contents of the cylinder, a further amount of steam is liquefied, and the temperature rises.

Moreover, *it rises to S exactly*, by the fundamental axiom, because the volume occupied by the water and steam is the same as before the first operation, and the quantity of caloric that they contain is also the same—as much having been abstracted in the third operation as was communicated in the first—while in the second and fourth operations, the contents of the cylinder neither gain nor lose caloric, as they are surrounded by non-conductors.

Now, during the first two operations, work was done by the steam on the piston; during the last two, work was done against the steam; on the whole, the work done by the steam exceeds that done on it, since evidently the temperature of the contents, for any position of the piston in its ascent, was greater than for the same position in the descent, except at the initial and final positions, where it is the same. Hence the pressure also was greater at each stage in the ascent than at the corresponding stage in the descent; from which the theorem is evident.

Hence, on the whole, a certain amount of work has been communicated by the motion of the piston to external bodies; and the contents of the cylinder having been exactly restored to their primitive condition, we are entitled to regard this work as due to the caloric employed in the process. This, we see, was taken from A, and wholly transferred to B. It thus appears that *caloric does work by being let down from a higher to a lower temperature*. And evidently, if we knew the laws which connect the pressure of saturated steam, and the amount of caloric that it contains, with its volume and temperature, it would be possible to apply a rigorous calculation to the various processes of the cycle above explained, and to express by formulæ the amount of work gained on the whole in the series of operations, in terms of the temperatures (S and T) of the boiler and condenser of a steam-engine, and the whole amount of caloric which passes from one to the other.

Though the above process is exceedingly ingenious and important, it is to a considerable extent vitiated by the assumption of the materiality of heat which is made throughout. To show this, it is necessary only to consider the second operation, where *work is supposed to be done* by the contents of the cylinder expanding *without loss or gain of caloric*, a supposition which our present knowledge of the nature of heat shows to be incorrect. But it is quite easy, as seems to have been remarked first by James Thomson in 1849, to put Carnot's statement in a form rigorously correct, whatever be the nature of heat. James Thomson says: 'We should not say, in the third operation, "compress till the same amount of heat is given out as was taken in during the first." But we should say, "compress till we have let out so much heat that the further compression (during the fourth stage) to the original volume may give back the original temperature."' It is to be remembered, however, that Carnot was not satisfied with his caloric hypothesis.

If we carefully examine the above cycle of operations, we easily see that they are *reversible*, i.e., that the transference of the given amount of caloric back again from B to A, by performing the same operations in the opposite order, requires that we expend on the piston, on the whole, as much work as was gained during the direct operations. This most important idea is due to Carnot, and from it he deduces his test of a *perfect* engine, or one which yields from the transference of a given quantity of caloric from one body to another (each being at a given temperature) the greatest possible amount of work. And the test is simply that the *cycle of operations must be reversible*.

To prove it, we need only consider that, if a heat-engine, M, could be made to give more work by transferring a given amount of caloric from A to B, than a reversible engine, N, does, we may set M and N to work in combination, M driven by the transfer of heat, and in turn driving N, which is employed to restore the heat to the source. The compound system would thus in each

cycle produce an amount of work equal to the excess of that done by M over that expended on N, without on the whole any transference of heat; which is of course absurd.

The application of the true theory of heat to these propositions was made 1849, 50, and 51 respectively, by Rankine, Clausius, and Sir W. Thomson. Rankine employed a hypothesis as to the nature of the motion of which heat consists, from which he deduced many valuable results. Clausius supplied the defects of Carnot's beautiful reasoning; accommodating it to the dynamical theory by a very simple change, and evolving a great number of important consequences. But by far the simplest, though the most profound, writings on this subject, are those of Sir W. Thomson, in *Transactions of the Royal Soc. of Edinburgh*: see these: also Tait's *Thermo-Dynamics*.

In its new form, thermo-dynamics is based on the two following laws:

Law I. (Davy and Joule.) *When equal quantities of mechanical effect are produced by any means whatever from purely thermal sources, or lost in purely thermal effects, equal quantities of heat are put out of existence, or are generated.*

Law II. (Carnot and Clausius.) *If an engine be such that, when it is worked backward, all the physical and mechanical agencies in every part of its motions are reversed, it produces as much mechanical effect as can be produced by any thermo-dynamic engine, with the same temperatures of source and refrigerator, from a given quantity of heat.*

The proof of this second law differs from that of Carnot (given above as regards reversible engines) by being based no longer on the supposition of the materiality of heat, but on the following axiom, in some of its many possible forms—It is impossible, by means of inanimate material agency, to derive mechanical effect from any portion of matter by cooling it below the temperature of the coldest of the surrounding objects. It will be easily seen that the pair of engines (one reversible) before mentioned would, if worked in combination, form a perpetual motion; and, besides, would constantly transfer heat from a colder to a warmer body.

One of the immediate and most important deductions from these principles is—that only a fraction of the heat employed in any engine is converted into useful work (the remainder being irrecoverably lost). This fraction was shown by Thomson to be capable of expression as

$$\frac{S - T}{S};$$

where S and T are the temperatures of the source and condenser, *measured from the absolute zero* of temperature: see HEAT. Thus, an air-engine, in which a far greater range of temperature can be safely used than in a steam-engine, employs effectively a much larger portion of the heat supplied to it; and there is no doubt that air-engines would supersede steam-engines, if we could get a material capable of enduring the great heat required.

THERMOMETER.

THERMOMETER, n. *thèr-mòm'ě-tèr* [Gr. *thermos*, warm; *metron*, a measure]: literally 'heat-measurer,' an instr. for measuring the degree of heat or temperature of bodies by the regular expansion of mercury, or of some other substance confined in a graduated glass tube: see **CENTIGRADE**: **FAHRENHEIT**: **RÉAUMUR**. **THERMOMETRIC**, a. *thèr'mō-mèt'rik*, or **THER'MOMET'RICAL**, a. *-rĭ-kāl*, pert. to a thermometer; made or ascertained by a thermometer. **THER'MOMET'RICALLY**, ad. *-lĭ*. **THERMOM'ETRY**, n. *-ě-trĭ*, the art of constructing thermometers. **THERMOMET'ROGRAPH**, n. *-rō-grāf* [Gr. *graphō*, I write]: a self-registering thermometer, for registering maximum and minimum temperatures.—The *Thermometer* is an instrument which measures temperature (see **HEAT**) by the *expansion* of bodies. Its early history is obscure. There are various claimants for a share at least in its invention, and their testimony agrees approximately in referring it to the beginning of the 17th century.

In the ordinary spirit-T., as it is called, indications are given by the expansion of a quantity of alcohol which entirely fills a glass bulb, and partially a narrow tube attached to it.

To construct such an instrument, a capillary tube of as uniform a bore as possible is selected. The easiest method of testing its uniformity is to introduce a column of mercury, about an inch long, into the tube, and gradually move it along by inclining the tube, carefully measuring the length of the column in each of its successive positions: it is obvious that the column will be longer the smaller is the mean section of the portion of the tube occupied at any time by the drop of mercury. If considerable differences of length are found, the tube is rejected at once. The best tubes are those which, if showing any change, taper very slowly but nearly uniformly from one extremity to the other; a defect which can easily be allowed for in the subsequent graduation of the instrument. A bulb is blown on one end of the selected tube; large, if the instrument is meant to be very delicate; small, if a common instrument is to be made, or one which will work through a great range of temperature. The bulb is heated to expand the contained air, and then the open end of the tube is plunged into alcohol, usually tinged with coloring matter, for greater visibility. As the bulb cools, the atmospheric pressure on the alcohol in the vessel forces some of it into the stem, and perhaps a little into the bulb. The tube being then inverted, a few dexterous taps suffice to shake the greater part of the alcohol into the bulb. The lamp is again applied, with caution, until the alcohol boils, and the rapidly escaping vapor drives the air almost entirely from the tube, whose open end is immediately plunged again into the colored spirit. Unless the stem be nearly 40 ft. in length—and thermometers have been made by Forbes (q v.) of length approaching to this for measurement of underground temperature—the alcohol fills the whole of the ball and stem as soon as the glass has cooled. The bulb is again cautiously heated so that, by the expansion of the spirit,

such a portion may be expelled, that when the whole has again cooled, the level of the liquid in the tube may stand near some point previously determined with reference to the particular adaptation of the instrument. Finally, the lamp being again applied to the tube, near the upper surface of the liquid, that portion of the spirit is again made to boil; and while the vapor keeps the free end of the tube clear of air, that end is hermetically sealed; and the glass-blower's part of the work is done. A somewhat similar, but more difficult process is requisite if other liquids, e.g., mercury, ether, sulphuric acid, etc., are employed to fill the bulb, each of these liquids having its own special use in certain philosophical inquiries. It remains only that the instrument be *graduated*, so that definite information may be given by its indications.

In the older thermometers, the scale was arbitrary, so that no comparable readings could be taken by means of different instruments. In the finest modern instruments, also, the scale is usually quite arbitrary, being, in fact, engraved on the tube during the process of calibration above described. But then, by careful observation, certain definite temperatures are measured in terms of this arbitrary scale, so that the value of a degree and the position of some definite zero-point are determined for it, and the result engraved on the tube. These numbers enable us, by an easy calculation, to reduce the observed reading of the fine instrument to its equivalent in some of the standard scales.

At present, we assume, what is very nearly true for mercury at least, that equal increments of bulk correspond to equal increments of temperature. All, then, that is necessary is to fix two definite temperatures, and assign their positions on our scale. Water being one of the most common bodies in nature, and being almost everywhere easily obtainable in purity, is usually employed; and its *freezing* and *boiling* points are taken as the definite points. The temperature of freezing water or of melting ice is almost absolutely fixed, for (see HEAT) pressure alters it only very slightly. It is otherwise with the boiling point of pure water, for this is considerably raised by increase of pressure; so much so, in fact, that if the barometer be not attended to, an error of several degrees is possible. Hence we must define the particular pressure, usually 30 inches, at which the boiling-point is to be determined. The T., constructed (so far) as above described, is to have its bulb, and nearly the whole of the portion of the stem which contains liquid, immersed in pounded ice, from which the melted portion is freely trickling; and when the level of the spirit has become stationary, its position, the *freezing-point*, is marked on the tube. Similarly, the barometer standing at 30 inches, the bulb is inclosed in the steam immediately above the surface of water freely boiling: the *boiling-point* is thus obtained. It remains only to decide by what numbers these points shall be indicated, because (on account of the nearly uniform expansion of mercury) then the remaining divisions can be at once filled in by dividing the interval between them into equal parts, or, if necessary, allow-

THERMOMETER.

ing for a slight taper in the tube. The only scales which require mention are those of Fahrenheit (F.), Réaumur (R.), and Celsius (C.). Of these, the first is commonly used in the United States and Great Britain, the second in Germany, the third in France; but the third, under the name *Centigrade* scale, is almost exclusively used by scientific men of all nations. The relations of these scales are shown by the following figure:

Fahr.	0	32	77	122	212
		⋮	⋮	⋮	⋮
Réau.		0	20	40	80
		⋮	⋮	⋮	⋮
Cent.		0	25	50	100

In the F. scale, the freezing-point is 32°, and the boiling-point 212°, so that the space between these is divided into 212 — 32, or 180, equal parts or degrees. In the others, the freezing-point is the zero, but the boiling-point is 80° and 100° respectively. It is of course easy to reduce from one of these scales to another. Thus—What is the C. reading for 77° F.? (see the dotted line in the figure). The numbers in Fahrenheit's scale all are too great by 32, because 32°, and not 0°, stands for the freezing-point: subtract this 32 from 77, and we have 45. Hence the required number of C. degrees must bear the same ratio to the 100 from freezing to boiling in that scale that the 45 bears to the 180 degrees between the same limits in F.: the requisite number is therefore

$\frac{45}{180} 100 = 25^\circ \text{C.}$ In words—*To convert Fahrenheit to*

Centigrade, subtract 32, and multiply by $\frac{100}{180}$, or $\frac{5}{9}$. Vice

versa—To pass from Centigrade to Fahrenheit, multiply by $\frac{9}{5}$, and add 32. Thus the F. value of 50 C. is $\frac{9}{5} 50 + 32 = 122$, as in the figure. Similar processes apply to the R. scale.

It is supposed that Fahrenheit fixed his zero probably by means of a freezing mixture, such as snow and salt, or sal-ammoniac. It is much to be desired that the C. scale alone were employed.

A mercurial T. ceases to be of use for temperatures only a little above the freezing-point of mercury; but it has a wide range upward, as mercury does not boil till about 600° C. On the other hand, a spirit-T., though of little use beyond about 50° or 60 C., as alcohol boils at 70° C., is useful for any degree of cold yet produced, as alcohol has never yet been frozen. When extreme sensitiveness is required, ether, being considerably more expansible than alcohol, is sometimes employed; as by Thomson in detecting the effect of pressure on the freezing-point of water. Water would be about the worst substance with which a T. could be filled; for besides its expanding in the act of

THERMOMETER.

freezing, and therefore necessarily bursting the instrument if it were ever allowed to reach the freezing-point, its scale would read partly backward and partly forward; for as ice-cold water is gradually heated up to 4° C., it contracts, and begins to expand again after that limit has been passed.

To make thermometers self-recording, various schemes have been proposed. Those most in use indicate only the *maximum* and *minimum* temperature during each 24 hours; or during the interval which has elapsed since they were last set. The usual arrangement consists of two thermometers, a mercurial and a spirit one, fixed horizontally to the same frame, with their bulbs at opposite ends of the frame. Above the mercury is a small piece of steel or ivory, and in the spirit a small and light float of glass or enamel. Capillary forces prevent the steel from entering the mercury, and the enamel from leaving the spirit. As the mercury expands, it pushes the steel before it, and when it again contracts, it leaves it behind; the end nearest the mercury thus remaining at the highest or maximum indication which that T. has given. In the spirit-T., the liquid, as it expands, freely passes the enamel, and leaves it undisturbed; but it can never contract so as to leave it dry. It therefore pulls the enamel back when it contracts, and thus the extremity furthest from the bulb marks the lowest point which the spirit has reached, or the minimum temperature. To set this instrument, incline it so that the steel falls back to the surface of the mercury—the enamel at the same time comes to the surface of the spirit.

The best mode of registration is undoubtedly the photographic. For this purpose, a mercurial T. is placed vertically before a narrow slit, in such a way that no light can pass through the slit except above the level of the

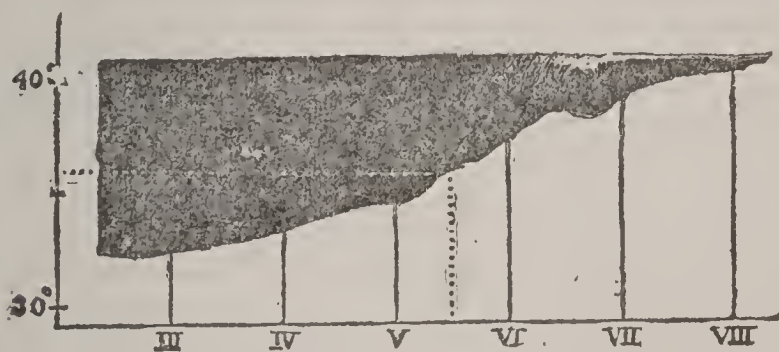


Fig. 1.

mercury in the tube. A gas flame is kept burning at some distance in front of the slit, the bulb of the thermometer being protected from its radiation; and behind the slit, a sheet of prepared photographic paper is exposed to the narrow line of light which passes above the mercury. This paper is fixed on a cylinder with vertical axis, which is made to revolve uniformly by clockwork. Lines are drawn by the clockwork on the paper, giving the position of the slit at each hour of the 24, or the gas-flame is mechanically reduced or eclipsed at intervals of an hour;

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so that the record, when photographically developed, gives the temperature for every minute of the day and night, in a form represented above; where the blackened space represents the portion of the paper which has been exposed to the light. To find from such a record what was the temperature at any hour, say 5 hours 30 minutes A.M., draw a vertical (dotted) line, as in the figure, half-way between the V and VI lines, and from the point where it meets the dark space, draw a horizontal (dotted) line. This intersects the scale (to the left in the figure) at 36° , the temperature required.

Among ordinary meteorological instruments is the *wet-bulb T.*—simply an ordinary T., with the bulb covered with paper or cotton-wool, kept constantly moist by the capillary action of a few fibres connecting it with a small vessel of water. If the air be *saturated* with moisture (see DEW: EVAPORATION), there will be no evaporation, and the wet-bulb T. will give the same indication as the dry-bulb. But the drier and the warmer the air is, the faster does the water evaporate, and (the latent heat of vaporization being mainly taken from the moist bulb) the lower does the mercury sink in the moist-bulb instrument. The difference between the readings of the two instruments, compared with the actual temperature, as shown by the dry-bulb, thus leads to a determination of the hygrometric state of the air.

So far, we have spoken of the instruments now in common use. But the *air-T.* was probably the oldest form; and has a scientific superiority over those above described. Theoretical and experimental investigations, connected with the modern Dynamical Theory of Heat (see FORCE: HEAT), show that equal increments of heat produce almost exactly equal changes of bulk in a nearly perfect gas, such as air, if the pressure to which it is exposed be constant. Hence, temperature, as measured by an air-T., gives a true indication of the quantity of energy present in the form of heat. As the comparison of an air-T. with a mercurial one shows that, for temperatures not greater than 300° C., or 572° F., the indications of the two agree very closely, the ordinary mercurial T. practically possesses within these limits the same advantage.

As the pressure of a gas depends on the amount of heat that it contains, the *absolute zero* of temperature, or the temperature of a body wholly deprived of heat, may be determined by finding the temperature at which a perfect gas would cease to exert pressure. For ordinary temperatures, it is found (see HEAT) that air increases in bulk by $\cdot 3665$, and hydrogen by $\cdot 3668$ of its bulk, when heated under constant pressure from 0° to 100° C. Again, by Boyle's law, if the air be compressed again, at constant temperature 100° C., to the bulk it had at 0° C., its pressure is increased by $\cdot 3665$ of its former amount. Thus, p being the pressure at temperature 0° C., p_t that at t° C., we have, when the volume is kept constant,

$$p_t = p_0(1 + \cdot 003665t).$$

THERMOMETER.

If we assume this to hold for all temperatures, p_t vanishes when

$$1 + \cdot 003665t = 0;$$

or $t^\circ = -274^\circ \text{ C.}$ very nearly.

That is to say, at 274° C. under the freezing-point of water, a perfect gas ceases to exert pressure on its containing vessel—i.e., is deprived of that thermal energy on which pressure depends.

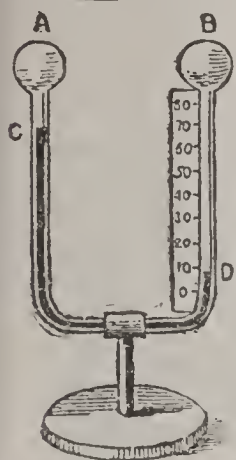


Fig. 2.

The air-thermometers in common use are affected by the pressure, as well as the temperature, of the atmosphere. To avoid this inconvenience, Leslie and Rumford in the 19th c. revived the *Differential T.* of Sturmius. This instrument, in one of its many forms, is represented in fig. 2. Here a bulb is blown at *each* end of the tube (which is bent into a U-form), and the liquid in the stem is used merely as an index, both balls being full of air. The length of the column of fluid is usually adjusted so that it can just fill one of the

vertical arms and the horizontal portion of the tube; and the quantities of air in the two balls are so adjusted, that the column will take this position *when the two balls are at the same temperature.* If the ball A be heated more than B, the liquid index will take a new position, such as CD, and this is read off by a scale applied to either of the vertical arms. The graduation of this instrument may be effected by calculation, but it is usually done experimentally. Leslie made good use of it in his investigations on heat; and, with various adjuncts, e.g., coloring the glass of the ball A, while that of B was left white; silvering or gilding one of the balls; covering one of them with moist silk or linen, etc., this instrument became in his hands a *Photometer*, an *Æthrioscope*, a *Hygrometer*, etc.

To thermometers which depend for their action on the expansion of solids, the name **PYROMETER** (q.v.) is frequently given; but that of Bréguet, as delicate as a good ordinary mercurial T., is not alluded to in that article. The principle of this very beautiful instrument may be explained thus: In bending a slip of wood, the fibres on the convex side are necessarily more extended than those toward the concave side. Conversely, if the fibres on one side of a slip of wood were to expand more than those on the other, the slip would bend. Bréguet solders together two thin strips of gold and platinum, or platinum and silver; for portability and concentration bends the compound strip into a helix, fixes its upper end, and attaches a horizontal index to the lower end. The least change of temperature in the surrounding air changes the length of one side of the compound slip more than the other, and the helix twists or untwists through an angle very nearly proportional to the change of temperature.

For measuring radiant heat, the most delicate instrument is the thermo-multiplier: see **ELECTRICITY**.

THERMONATRITE—THESE.

THERMONATRITE, n. *thér-mō-nā'trīt* [Gr. *thermos*, warm, and Eng. *natron*, crude carbonate of soda]: prismatic carbonate of soda with slight earthy impurities, occurring with natron in the lakes of S. Amer., the Egyptian desert, etc.

THERMOPILE, n. *thér'mō-pīl* [Gr. *thermos*, warm, and Eng. *pile*]: a pile of alternate bars of dissimilar metals joined only at the ends, which develops an electric current by the application of heat at one of the points where the metals are joined.

THERMOPYLÆ, *thér-mōp'ī-lē* (*literally*, 'the hot gates'): famous pass leading from Thessaly into Locris, and the only road by which an invading army can penetrate from n. into s. Greece. It lies s. of the present course of the river Spercheius, between Mt. Ceta and what was anciently an impassable morass bordering the Maliac Gulf. In the pass are several hot springs, from which probably T. received the first part of its name. T. has won immortal celebrity as the scene of the heroic death of Leonidas (q.v.) and his 300 Spartans in their attempt to stem the tide of Persian invasion B.C. 480. Again, B.C. 279, Brennus, at the head of a Gallic host, succeeded, through the same treachery that had secured a victory to Xerxes, in forcing the united Greeks to withdraw from the pass.

THERMOSCOPE, n. *thér'mō-skōp* [Gr. *thermos*, warm; *skopēō*, I view]: an instr. for indicating changes of temperature without indicating its degree. **THER'MOSCOP'IC**, a. *-skōp'īk*, of or pertaining to the thermoscope.

THERMOSTAT, n. *thér'mō-stăt* [Gr. *thermos*, warm; *statos*, standing]: a self-acting instr. for regulating temperature. **THER'MOSTAT'IC**, a. *-stăt'īk*, pertaining to a thermostat; heat-regulating.

THERMOTICS, n. plu. *thér-mōt'īks* [Gr. *thermos*, warm]: the science of heat. **THERMOT'IC**, a. *-īk*, or **THERMOT'ICAL**, a. *-ī-kāl*, pertaining to heat; produced by heat.

THERMS, *thērmz*, or **THAIRMS**, n. plu. *thārmz*, or **THARMS**, n. plu. *thārmz* [AS. *thearm*, an intestine, an entrail]: in *Scot.*, the intestines, as of a sheep; guts; prepared guts, as for musical strings; also spelled **FEARNS**, n. plu. *fērnz* or *fārnz*.

THERSITES, *thér-sī'tēz*: son of Agrius, whom Homer, in the *Iliad*, makes the ugliest and most impudent talker among the Greeks before Troy. His name in antiquity was a synonym for dastardy and malevolent impudence. The later poets say that he was slain by Achilles for calumniating him.

THESAURUS, n. *thē-saw'rūs* [L. *thēsauros*; Gr. *thēsauros*, a treasure]: treasury or storehouse; repository of knowledge; lexicon; Dictionary (q.v.).

THESE, a. *thēz* [AS. *thæs*]: the plu. of **THIS** (q.v.).

THESEUS.

THESEUS, *thē'sūs*, or *thē'sē-ūs*: one of the most celebrated legendary personages of the Greek heroic age. The legend of his career is differently told, but he is usually said to have been the son of Ægeus, King of Athens, by Æthra, daughter of Pittheus, King of Trœzen. He was brought up at the court of his maternal grandfather, and, reaching manhood, proceeded to his father's residence at Athens. On his way thither he performed several famous exploits, such as the destruction of Periphetes, Sinis, Phæa, the Krommyonian sow, Skiron, Kerkyon, and the fell robber Prokrustes: see PROCRUSTES. After his arrival, Medea sought to poison him, but her plot failed. Ægeus recognized his son, and Medea and the sons of Pallas were banished. The next feats of T. were the capture of the Marathonian bull, and the deliverance of Athens from its dreadful tribute of youths and maidens to the Cretan Minotaur (q.v.), in which he was assisted by the Cretan princess Ariadne (q.v.). On his return to Athens, his father, Ægeus, destroyed himself, and T. succeeded to the throne. In his new capacity of ruler, he showed wisdom equal to his previous heroism. To him the legend ascribes the consolidation of the 12 petty commonwealths of Attica into one state—an event that certainly did occur at some period of Attic history, which was commemorated by the festival of the *Synakia*. T. also reorganized the Athenaic festival and renamed it the Pan-Athenaic; founded the Isthmian games and many other institutions; but soon the craving for his old stirring life returned, and, having laid down his authority, he went forth with Herakles in quest of new adventures. They fought the Amazons, and T. carried off their queen, Antiope or Hippolyte, by whom he had a son. After the death of Antiope, he married Phædra. The legend, by a ludicrous anachronism, makes him take part in the Argonautic expedition, join in the Calydonian hunt, help Peirithous and the Lapithæ against the Centaurs, and assist in the attempt to rescue Persephone from the lower world (which led to a long imprisonment there, from which he was delivered by Herakles). Returning to Athens, he found that the minds of the people had been prejudiced against him during his absence; and as he could not re-establish his authority, he withdrew to Skyros, where he was treacherously destroyed by King Lykomedes. Cimon is said to have discovered his grave at Skyros, B.C. 469, and to have brought back his bones to Athens. What grain of historical fact may lie in the myth of T. it is impossible to say. One of the most brilliant figures of the heroic age, reminding us, by his valor, wisdom, and generous love of the fair sex, of a knight of chivalry, we are loath to yield him as a victim to the ravenous maw of criticism; yet all that can be said for his historic reality is, that so finished and admirable a prince is more likely to have been a legendary tradition of some real hero of primeval times than a mere creature of the poetic imagination.

THESIS—THESSALONIANS.

THESIS, n. *thē'sis*, **THIESES**, n. plu. *thē'sēz* [L. and Gr. *thesis*, a placing or setting, a proposition—from Gr. *tithēmi*, I place, I set: F. *thèse*: It. *tesi*]: position or proposition laid down or advanced to be supported by argument; a theme; a subject or question prescribed to a student on which to write before granting him a degree; the exercise or essay itself; a subject; in *logic*, an affirmation, as distinguished from a hypothesis.

THESIS, n. *thē'sis* [Gr. *thesis*, a setting or placing—from *tithēmi*, I set, I place]: in *verse*, originally and correctly the accented, but in modern usage the unaccented part of the foot: see **ARSIS**.

THESMOPHORIA, *thēs-mō-fō'rī-a* [Gr. plu. of *thesmophoros*, lawgiving]: festival celebrated in different parts of anc. Greece, but especially in Attica, in honor of Demeter, as the *thesmophoros* or 'lawgiving' goddess, inasmuch as, by the introduction of agriculture, she gave the first impulse to civil society, especially to the honorable bond of marriage. The T. lasted three days, from the 11th of the month Pyānepsion (Oct. 24). Only married women could take part in the ceremonies. After certain preliminary purifications (among which abstinence from sexual intercourse was prominent), the women inaugurated the solemnity by marching in procession from Athens to Eleusis, where the night was spent in celebrating the mysteries of the goddess. The next day, called *nesteia*, or the 'day of fasting,' was spent in mourning. The women sat for a while on the ground around the statue of Demeter, and ate nothing but cakes made of sesame and honey. They next proceeded barefooted to the Thesmophorion or temple of Demeter, where they deposited their mystical offerings to the goddess. On the third day, called *Kalligeneia* in honor of Demeter as the 'mother of beautiful offspring,' fasting was exchanged for merriment, jollity, and raillery.

THESMOTHETE, n. *thēs'mō-thēt* [Gr. *thesmothētēs*—from *thēsmōs*, that which is laid down, a law; *tithēmi*, I place]: in *anc. Greece*, a lawgiver; a legislator; especially, one of the six junior archons at Athens, who among their other duties revised the laws annually.

THESPIAN, a. *thēs'pī-ān* [Gr. *Thespis*, the founder of the Greek drama]: of or pertaining to the drama.

THIES'PIS: see **DRAMA**.

THESSALONIANS, *thēs-sā-lō'nī-anz*, **EPISTLES TO THE**: two epistles addressed by Paul to the Thessalonians, the first being perhaps the earliest of his epistles.

THE **FIRST EPISTLE** was written probably at Corinth about the close of A.D. 52. and occasioned by the 'good tidings' which Timothy brought him of the 'faith and charity' displayed by his Macedonian converts. It may be divided into two portions, a *narrative* and a *hortatory*; the former comprising the first three chapters, terminating with a prayer for the Thessalonians; the latter the remaining two chapters. The narrative portion gives much important and interesting information regarding the Church

THESSALONICA—THESSALY.

of the Thessalonians;’ but perhaps its great value consists in the picture that it presents of the apostle himself—‘bold in God,’ yet ‘gentle, even as a nurse cherisheth her children;’ scorning to use ‘flattering words,’ or to ‘seek glory’ from an assertion of his apostolic dignity; nay, in the excess of a noble pride, ‘laboring night and day because he would not be chargeable unto any.’ The epistle is conspicuous for absence of the ordinary doctrinal element; even the word ‘justification,’ it has been remarked, does not occur: on the other hand, it is penetrated with a deep conviction of the nearness of the second coming of Christ, and with an undefined fear lest, in spite of all his labors, the ‘tempter’ (probably, in this case, the Hellenistic Jews of Thessalonica) should seduce the Thessalonian Christians from the ‘faith.’ Baur (q.v.) was the first to impugn the genuineness of the epistle; but his opinions on this point have found little favor among scholars.—See Jowett’s, Ellicott’s, and Meyer’s *Commentaries*; and the New Test. Introductions of Bleek, Hilgenfeld, and Scrivener.

THE SECOND EPISTLE also was written probably at Corinth, a few months after the first. It is generally thought to have been occasioned by the misapprehension of the apostle’s meaning on the subject of the coming of Christ to judgment, to which the previous letter had given rise; though Hug and others consider the expression ‘be not troubled . . . by letter, *as from us*’ (ii. 2), as indicating that somebody had forged an epistle in Paul’s name; and it is scarcely possible to interpret the passage at the close of the letter, ‘The salutation of Paul with mine own hand, which is the token in every epistle: so I write’ (iii. 17), otherwise than as a precaution against forgery. From its contents, we gather that adversaries of the apostle had been at work among his Macedonian converts, and had misrepresented his teaching, particularly on the topic above mentioned. Whoever they were (probably Jews or Judaizing Christians), they must have obtained some success; for we are distinctly aware of a sharper and more imperious tone in the language of Paul. He now teaches more precisely that Christ could not come until the antagonistic forces in human or diabolic society had made themselves more prominent, and done their worst. The genuineness of this epistle has been doubted or denied by some who have no question about the first.

THESSALONICA: see SALONICA.

THESSALY, *thēs’a-lī*: largest division of anc. Greece; s. of Macedonia and e. of Epirus, separated from the latter by Mt. Pindus, and from the former by the Cambunian Mountains; the Ægean Sea bounding it on the e., and the Maliac Gulf and Mt. Cæta on the s. T. proper is a vast plain shut in on every side by mountains; n. and w. by those above named, s. by Mt. Othrys, e. by Mts. Pelion and Ossa, the only opening being the vale of Tempe in the n.e., between Ossa and Olympus. The plain of T. is said at one time to have been a vast lake, whose waters found an outlet by the vale of Tempe. This plain is drained chiefly by the river Peneius (now *Salambria*), which

THESSALY.

traverses the country in a n.e. direction, and its tributaries; and is the most fertile in all Greece, producing in ancient times abundance of corn and cattle, and a breed of horses considered the finest in Greece.

History.—T. was called originally *Æolia*, indicating that the country was at one time inhabited by *Æolians*, who, however, were either expelled (proceeding s., and taking up their residence in *Bœotia*, etc.) or reduced to slavery by immigrants from the more rugged region of *Epirus* about B.C. 1000. As in *Laconia*, the inhabitants of T. appear to have been divided into three classes—1, the *Epirotic* conquerors, who became rich landed proprietors; 2, those descendants of the original inhabitants who, though dependent on the nobles, yet possessed a few privileges—corresponding to the *Laconian Pericæi*; 3, the *Penestæ*, or those of the original inhabitants who had been reduced to serfdom, and who cultivated the lands of their conquerors, corresponding to the *Helots*, though on the whole their condition was better. These last frequently rebelled against their masters, who were very often at war among themselves. Each of the four districts into which T. proper was divided was regulated by a council of its own; but they were occasionally united under a *Tagus* or president, whose power and time of office appear to have been indefinite. The government, from an early time, appears to have been oligarchical in the separate cities—of which *Pharsalus*, *Larissa*, *Heracleum*, and *Pheræ* were the chief—the principal power being in the hands of the two great families *Aleuads* and *Scopads*, famous for hospitality and encouragement of poets and artists. T., however, never took any important part in Grecian history, and it was only after the end of the *Peloponnesian* war that it exercised any influence on the affairs of Greece. About B.C. 374, *Jason*, Tyrant of *Pheræ*, was elected *Tagus* of all T. The rule of *Jason's* successors became so unbearable that aid was sought from *Philip* of *Macedon*, who in 344 subjected the country to *Macedonia*. T. remained subject to the *Macedonian* kings till the victory of *Cynocephalæ* B.C. 197 brought it under the protection of *Rome*. Under the emperors, T. was united with *Macedonia*, but after *Constantine* it was a separate province. In A.D. 1204, with other portions of the *Eastern Empire*, it came under the dominion of the *Venetians*, and 1355 was taken by the *Turks*. The restoration to Greece of T. s. of the *Salambrìa* was recommended by the *Berlin Congress* 1878; and subsequently various modifications of the *Greco-Turkish* frontiers were proposed. War between Greece and Turkey seemed imminent; but 1881 Turkey agreed to cede, and Greece to accept, T. s. of the ridge of mountains forming the water-shed of the *Salambrìa* (anc. *Peneus*). A war between Turkey and Greece (1897) resulted in the recession of a strip of territory on the n.

THETFORD—THIAN-SHAN.

THETFORD, *thet'fôrd*: municipal borough and market town of Norfolk, England; on the Little Ouse, 96 m. n.n.e. of London by the Great Eastern railway. Malting is carried on to a considerable extent, and there is some trade on the Ouse, which is navigable to this point. There are remains of a Cluniac priory and of other religious edifices. —Pop. (1881) 4,034 ; (1891) 4,247.

At T., which is a very ancient town, a synod was held 669; and two centuries later, 870, it was taken and sacked by the Danes. In the time of Edward III. the town had 20 churches and 8 monasteries.

THETIS, *thê'tis*: daughter of Nereus and Doris, married against her will by the gods to Peleus, by whom she became the mother of Achilles. She dwelt in the depths of the sea with her father, and had, like Proteus, the power of changing her shape. Her hand is said to have been sought by Poseidon and Zeus, who gave up the pursuit on Themis declaring that the son of T. would be greater than his father.

THEURGY, n. *thê'ér-jî* [Gr. *theourgia*, the work of God, a miracle—from *thêös*, a god; *ergon*, work]: a miracle; the power of doing supernatural things by invoking God, etc.; a species of magic. **THE'URGIST**, n. *-jîst*, one who pretends to theurgy. **THEURGIC**, *thê-ér'jik*, or **THEUR'GICAL**, a. *-jî-kûl*, pertaining to or done by theurgy.

THEW, n. *thû* [AS. *theaw*, custom, behavior]: in *OE.*, manner; custom; quality; habit of life. **THEWED**, a. *thûd*, in *OE.*, educated; accustomed.

THEWS, n. plu. *thûz* [same as Eng. *thigh*, the fleshy part of the leg: Icel. *thjo*, buttocks: AS. *theoh*; Dut. *dij*, the thigh]: muscles; brawn; strength. **THEW**, in *OE.*, a thigh; a fat plump part. **THEWY**, a. *thû'z*, having strong or large muscles; muscular. **THEWS AND SINEWS**, the pith and strength of any effort or enterprise.

THEY, pron. *thâ* [AS. *thâ*; Dan. *de*, they]: the nom. plu. of *he*, *she*, or *it*, denoting more than one person or thing; used indefinitely, as '*they say*'—that is, people generally, or the world at large, say. *Note.*—*They*, *their*, *them*, may allowably be employed, even though their cor-relatives be in the sing. number; the use of these forms as singulars tends to prevent awkward repetitions and direct personalities. Such a form of expression as '*neither John nor his sister could say his or her lessons*,' though strictly and grammatically correct, is an awkward one, and sounds harsh: '*neither John nor his sister could say their lessons*,' is more pleasant to the ear, and is quite in accordance with common usage.

THIAN-SHAN, or **TIEN-SHAN**, *tê-ân'shân* (Celestial Mountains): great mountain system, consisting of several ridges, mostly parallel, in central Asia, s. and e. of Lake Issyk-kul; lat. about 42° n.; said to extend e.n.e. from the vicinity of Samarkand, to about long. 96° e.—1,500 m. It is one of the four great ranges, trending in a general direction from w. to e., which traverse central Asia—viz.: the Altai-Sayan, or Altaian Mts., in lat. about 50° n.; the T.

THIBET—THICK.

Mts., lat. about 42° n.; the Kuen-lun system, lat. about 36° n.; and the Himalaya Mountains (q.v.). In long. 76°—79° e., the T. Mts. are divided into two great, nearly parallel ridges, and inclose between them a deep valley, about 15 m. in average breadth, through which the river Narin—chief head-water of the Syr-Daria—flows w.s.w. East of these ranges the mountains are known as the Tengri-Tagh, the chief peak being the Tengri-Khan, 24,000 ft. East of the Tengri-Tagh the T. continues in a double chain, at average height 11,330 ft. The s.w. branches of the T. (the Alai and Trans-Alai), extending toward the Pamir (q.v.), contain among others the 'Kaufmann' peak, over 25,000 ft. high. The e. section has the most stupendous glaciers, snow-fields, and snow-peaks. The belief that there were volcanoes in the system was disproved 1881, the fire and smoke seen having been shown to be due to the burning of ignited coal-beds. North of T. is the Ili or Kuldja (q.v.) valley, s. is the basin of the Tarim.

THIB'ET: see TIBET.

THICK, a. *thĭk* [Icel. *thyckr*, close pressed: Dut. *dik*; Dan. *tyk*; Ger. *dick*, thick: comp. Gael. *tiugh*, thick, close set]: not thin; dense; close; compact; muddy; not clear; of relatively great depth from side to side, or from surface to surface; not slender; deep, as five inches *thick*; crowded; following each other in quick succession; without proper intervals of articulation, as a *thick* utterance; dark; misty; obscure; dull; stupid; intimate or familiar, as he is very *thick* with him; as *thick* as thieves: N. the most crowded part, as, the *thick* of the fight: AD. fast; frequently; to a greater depth than usual; closely: V. in *OE.*, to thicken. THICK'LY, ad. *-lĭ*, deeply; closely; in quick succession. THICK'NESS, n. *-nĕs*, closeness or denseness; depth from side to side, or from surface to surface; quantity laid on quantity to some depth; consistence; indistinctness, as of speech; density; grossness; want of quickness of perception. THICK'ISH, a. *-ĭsh*, somewhat thick. THICK-HEADED, a. having a thick skull; hence, dull; stupid. THICKSET, a. closely planted, as a hedge; having a short thick body; thick; large. THICK-SKULL, n. a dull or stupid person; a blockhead. THICK-SKULLED, a. dull; stupid; crass. THICK-STRAKES, in *shipbuilding*, strakes of planking thicker than those in common use. THICK-STUFF, in *shipbuilding*, all planking above four inches in thickness. THICKEN, v. *thĭk'n*, to make or become thick or thicker in any sense; to render less thin; to become more dense; to become dark or obscure; to coagulate; to become more numerous; to press or be crowded. THICKENING, imp. *thĭk'nĭng*: N. something put into a liquid or mass to make it more thick. THICKENED, pp. *thĭk'nd*. THICK'ET, n. *-ĕt*, a number of growing trees or shrubs crowded irregularly together; a small close wood or copse. THROUGH THICK AND THIN, through whatever is in the way; in spite of every obstacle. THICK-SKIN, a gross coarse man; a numskull.—SYN. of 'thick, a.': dense; gross; coarse; crass; muddy; close; crowded; stupid; dull; deep; frequent; impervious; compact; solid.

THICK-KNEE—THIERRY.

THICK'-KNEE: bird of the genus *Oedienemus*, family *Charadriadæ*, nearly allied to the plovers, though, from its comparatively large size, often ranked with bustards. It differs from the true plovers in having both mandibles inflated toward the tip, and not merely the upper mandible. There are about half a dozen species. One in Britain, the **COMMON T.** (*O. crepitans*), is known also as the Thick-kneed Plover, Thick-kneed Bustard, Great Plover, Norfolk Plover, and Stone Curlew.

THIEF, n. *thēf*, **THIEVES**, n. plu. *thēvz* [Goth. *thiuvz*; Iccl. *thjofr*; Dan. *tyv*; Dut. *dief*; Ger. *dieb*, a thief]: one who takes away the property of another secretly and without leave; a secret pilferer; an excrescence or waster in the wick of a candle, causing it to gutter. **THIEVE**, v. *thēv*, to steal; to play the thief; to pilfer. **THIEV'ING**, imp.: **ADJ.** practicing theft. **THIEVED**, pp. *thēvd*. **THIEVERY**, n. *thēv'ēr-ī*, the practice of stealing; in *OE.*, that which is stolen. **THIEV'ISH**, a. *-ish*, given to stealing; addicted to theft; thief-like: acting by stealth; secret. **THIEV'ISHLY**, ad. *-lī*. **THIEV'ISHNESS**, n. *-nēs*, the state or quality of being thievish. **THIEF-CATCHER**, one whose business is to detect thieves and bring them to justice.

THIELT, *tēlt*: town of Belgium, prov. of W. Flanders, 15 m. s.s.e. of Bruges. An important linen-market takes place here annually; principal manufactures are linen, woolen, and cotton goods, gloves, vinegar, beer, and tobacco. Pop. (1876) 10,527; (1890) 9,821.

THIERRY, *tē-ā-rē'*, **JACQUES NICOLAS AUGUSTIN**: eminent French historian: 1795, May 10—1856, May 22; b. at Blois. He received his education in the normal school of his native town, and became a teacher in a provincial school. In 1814 he resigned this charge, came to Paris, and published his first work, *De la Réorganisation de la Société Européenne*. In this treatise he considers the practicability of having one government for the whole of Europe, preserving at the same time the nationality of each people. Adopting the views of St. Simon, T. was for three years his assistant. In 1817 he joined Comte and Dunoyer as editors of the *Censeur Européen*, in which he wrote many articles, literary, political, and historical. In 1820 he became engaged on the *Courrier Français*, in which he published his *Dix Lettres sur l'Histoire de France*. He now turned almost exclusively to historical writing. Having given up the *Courrier*, he pub. (1825) his masterpiece, *L'Histoire de la Conquête d'Angleterre par les Normands*; and *Lettres sur l'Histoire* (1827)—works which had great success, but whose laborious preparation appears to have ruined the eyesight of the author. Becoming quite blind 1830, he went in that year to Hyères for his health, and there met Julie de Quéréngal, authoress of considerable repute, whom he married 1831. He seems to have been able partially to resume work about this time, and 1835 he pub. *Dix Ans d'Études Historiques*, the introduction to which is one of the most eloquent of his works. In 1840 appeared *Récits des Temps Mérovingiens*, which gained

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the great Gobert prize. The preface gives an eloquent account of his own literary labors. His last publication was *Essai sur l'Histoire de la Formation et de Progrès du Tiers État* (1853). T.'s industry and talents had their deserved reward. His careful research has thrown light on the early ages of which he has written, dispelling much popular error regarding them. He is second to no French historian of the present day.—His younger bro., AMÉDÉE SIMON DOMINIQUE T. (1797–1873), also was a historian of high repute, dealing chiefly with Roman Gaul and its period in such works as *Histoire des Gaulois* (1828), *Histoire d'Attila* (1856, frequently reprinted).

THIERS, *te-är'*: manufacturing town of France, dept. Puy-de-Dôme; in a pleasant valley, on the right bank of the Durole, 23 m. e n.e. of Clermont. Its manufactures of cutlery, paper, and playing-cards gave to the town some importance in the 17th c.; and these industries are now extensive—cutlery employing 12,000 workmen in T. and adjacent villages; and other manufactures employing 8,000.—Pop. (1886) 12,005; (1891) 11,831.

THIERS', LOUIS ADOLPHE: French historian and statesman: 1797, Apr. 16—1877, Sep. 5; b. Marseille. His father, a locksmith when T. was born, is spoken of also as a cloth-merchant, and as an advocate at the parliament of Marseille; his mother belonged to an old commercial family which had fallen into poverty. He was placed by his mother's relatives in the Lyceum, where he achieved many victories over his competitors. In 1815 he was sent to Aix to study law. There he formed his friendship with Mignet the historian, with whom, as soon as he had taken his degree as advocate, he set off to Paris to seek his fortune. He lived for a time in obscurity and indigence; but obtaining an introduction to Lafitte, he was enrolled among the contributors to the *Constitutionnel*, then the leading liberal organ. He became distinguished for the vigor and hardihood of his articles; and as in France the occupation of a journalist was then, and for years afterward, esteemed in proportion to its influence over society, the young political writer was admitted into the most brilliant circles of the opposition. In the crowded saloons of Lafitte, Casimir Périer, Comte de Flahault, Baron Louis (great financier of the era), and of Talleyrand, he was favored with an intercourse with actors in the grand revolutionary drama, eminently helpful to him in his great historical undertaking. *L'Histoire de la Révolution Française* at once placed the briefless advocate and young political writer in the highest ranks of literary celebrity. Three editions were soon called for, and the profits on the sale, with the gift of a share in the *Constitutionnel*, by an admirer, raised him to comparative affluence. Leaving his garret in the alley of Montesquieu, he emerged into prominence among French leaders in the two paramount fields of literature and politics. 1830, Jan., he established a new paper of more democratic principles, the *National*. Assisted by Armand Carrel and some of the ablest of the liberal party, T., in this journal, waged unrelenting war against the Polignac administration,

which at length, stung beyond endurance, took the desperate measure of issuing the ordinances of July. The revolution of 1830 was the result. T. now entered on a public career, and was appointed sec.gen. to the minister of finance, and elected deputy for the town of Aix. His first appearance in the chamber of deputies gave no promise of his subsequent distinction. His diminutive person, his small face, encumbered with a pair of huge spectacles, and his whole exterior presenting something of the ludicrous, the new deputy, full of the impassioned eloquence of the revolutionary orators, attempted to impart the thrilling emotions recorded of Mirabeau. The attempt provoked derision; but soon subsiding into the more conversational mode natural to him—easy, vigorous, rapid, anecdotic—he became one of the most formidable of parliamentary champions; and, in the epigram of debate, ranked second to Lord Beaconsfield only, among statesmen of his time. From 1832, when the Soult cabinet was constructed, he continued till 1836 a minister (of the interior, of commerce and public works, for foreign affairs), with one short interval. 1836, Feb., he was nominated pres. of the council and foreign minister by Louis Philippe, but held this office only till Aug., when he passed into opposition. In 1840 he was again called by the king to the premiership. He refused Lord Palmerston's invitation to enter into alliance with England, Austria, and Prussia for preservation of the integrity of the Ottoman empire—desiring rather to secure for France a controlling power in Syrian and Egyptian affairs. Lord Palmerston entered into the treaty without France; Acre was taken by the British fleet, and Mehemet Ali was driven out of Syria. The popular irritation in France fostered by T. was excessive; and T. alarmed the continent by his threats of setting aside the treaties of 1815, and extending the French frontier to the Rhine. It was computed that he spent about \$40,000,000 in military and naval demonstrations. The Brit. govt. found occasion for remonstrance on certain procedures; and Louis Philippe dismissed his bellicose prime minister. He employed his leisure in historical pursuits. His *Histoire du Consulat et de L'Empire*, begun 1845, completed 1860, is one of the greatest historical works of the age. At the revolution of 1848, he accepted the republic, but was banished after the *coup d'état* of 1851 (see LOUIS NAPOLEON). After a short residence in Switzerland, he was permitted to return to Paris, where he published a continuation of his *History*. He re-entered the chamber 1863, having been elected deputy for the dept. of the Seine by the liberal opposition. In his speeches, T. constantly taunted the empire with the loss of foreign *prestige*; and these taunts are not to be left out of record when the disastrous war of 1870 is to be rightly accounted for. When that conflict became inevitable, he predicted the certain defeat of France in it. The early disasters of the war brought him into special prominence. It was T. who suggested laying waste the country around Paris. He declined to become a member of the govt. of national defense formed at the downfall of the empire; but

THIGH—THIMBLE.

voluntarily undertook diplomatic journeys to England, Russia, Austria, and Italy, on behalf of France—which were unsuccessful, but which gained for him the gratitude of his countrymen. According to the suggestions of these four neutral powers, T. opened negotiations—unavailing at the time—for peace with the king of Prussia at Versailles. After the capitulation of Paris, T. was elected to the national assembly, which chose him head of the provisional govt. It was due to his good sense that the French accepted the offered terms of peace. In 1871, after having crushed the Commune and restored order, he ceased to be ‘chief of the executive power’ of France, to become ‘president of the French republic;’ and this office he held till 1873, May, when, failing in his effort to make the republic permanent by definitive legislation, he gave place to Marshal MacMahon. His death was a severe blow to the republicans of France, whose leaders had latterly come to regard T., though a ‘conservative republican,’ as head of the whole republican party. T. had been a member of the *Académie Française* since 1836.

THIGH, n. *thī* [AS. *theoh*; Dut. *dij*, thigh: Icel. *thjo*, thick part of the thigh]: the thick part of the leg between the knee and the hip-joint. **THIGH-BONE**, the large bone of the thigh.

THILL, n. *thīl* [AS. *thīl*, a stake: Icel. *thīl*, a panelling]: the shaft of a cart, carriage, or other vehicle. **THIL’LER**, n. *-lēr*, or **THILL-HORSE**, the horse which goes between the shafts.

THIMBLE, n. *thīm’bl* [AS. *thymel*, a thumb-stall—from *thuma*, a thumb (see **THUMB**)]: a metal cap or cover or ring, with a pitted surface, used on the finger (originally the thumb) in driving the needle through the cloth in the operation of sewing; among *seamen*, an iron ring with a groove around it to receive a rope; among *mechanics*, a sleeve, bushing, or ferrule used to join the ends of pipes, shafting, etc., or to fill an opening etc. **THIMBLEFUL**, n. *’fūl*. **THIMBLEFULS**, n. plu. as much as a thimble can contain; a very small quantity. **THIMBLE-CASE**, a case for a thimble. **THIMBLE RIG**, or **-RIGGING**, a sleight-of-hand trick in which a pea or small ball being concealed or pretended to be concealed under one of three thimbles, the operator offers to bet that no one can tell under which thimble the pea is. **THIMBLE-RIG**, v. to practice thimble-rigging. **THIMBLE-RIGGER**, one who practices the above sleight-of-hand roguery to obtain money from the unwary by betting.—*Thimbles* were in use in antiquity in many lands: they are said to have been found at Herculaneum. John Lofting, mechanic from Holland, brought to England the art of making them; and manufactured them near London about 1695.

THIN, a. *thín* [Icel. *thunnr*; Dut. *dun*; Dan. *tynd*; Sw. *tunn*; Ger. *dünn*; L. *tenüis*, thin: comp. W. *teneu*; Gael. *tana*, thin]: not thick; watery; very liquid; not dense; not close or crowded; extended; sparse; lean; slender; slim; fine; of a loose or slight texture; slight; unsubstantial; faint: AD. thinly, as *thin-soled*: V. to make less dense or thick; to make less close or crowded; to reduce the number of; to rarefy. THINNING, imp.: N. the act of making less crowded or less thick. THINNED, pp. *thind*. THINNISH, a. *-nîsh*, somewhat thin. THIN'LY, ad. *-lî*. THIN'NESS, n. *-nês*, the opposite of thickness; slenderness; leanness; paucity; scarcity; rareness. THIN-SKINNED, a. having a thin skin—hence, unduly sensitive. TO THIN OUT, in *geol.*, said of a stratum which gradually diminishes in thickness and disappears.

THINE, pron. *thîn* [AS. *thin*; Goth. *theins*; Icel. *thinn*, thine]: the poss. case of the pron. *thou*; of or belonging to thee.

THING, n. *thîng* [Icel. and AS. *thing*; Ger. *ding*, originally meaning discourse—then, solemn discussion—cause, matter, or subject of discourse]: that which is or can be thought of; a matter; an affair; an event or action; any substance; sometimes used in contempt, tenderness, or pity, as, 'a hateful old *thing*' (applied to a person), 'the poor *thing* sighed.' THINGS, n plu clothes; luggage, as, to take off one's *things*; to get one's *things* together. NOT THE THING, *familiarly*, not as it should be; not right or proper.

THING, n. *tîng* [Icel. *thing*, a meeting of the people about public affairs; Sw. and Dan. *ting*, an assize of justice]: among the *Scandinavian nations*, an assembly or conference for talk and discussion about public affairs; an anc. parliament or popular court of justice. Note.—THING 1 is merely a secondary and popular application of THING 2. (1) The primary meaning is language or talk; (2) the place or assembly where public talk or palaver was held on the affairs of the district or nation; (3) generally any affair or matter for discussion; (4) then finally extended to property, exclusive interests, persons, and objects indefinitely. We have still *folkething*, the lower house of the Danish parliament, and *landsting*, the upper house; *storting*, the Norwegian parliament; Sw. *tingshus*, the house for a court of justice; Dan. *tingsted*, a place of justice. Eng. *hustings*, originally in the sing. *husting*, is the same word—till within the last few years common enough, but now almost obsolete.

THINK, v. *think* [Goth. *thagkjan*; Dan. *tænke*; Sw. *tänka*; Ger. *denken*, to think; Icel. *thekkja*, to observe (see **THANK**): to have the mind occupied on some subject; to revolve ideas in the mind; to muse; to hold as a settled opinion; to judge; to consider probable; to meditate; to ponder; to imagine; to intend; to believe; to suppose; to hope; to purpose; to design. **THINK'ING**, imp.: **ADJ.** having the faculty of thought; capable of a regular train of ideas: **N.** imagination; cogitation; judgment. **THOUGHT**, pt. pp. *thawot*. **THOUGHT**, n.: see **THOUGHT**. **THINKABLE**, a. *think'ä-bl*, capable of being thought of or conceived; conceivable, as a thought. **THINK'ER**, n. *-er*, one who thinks. **THINK'INGLY**, ad. *-ing-lī*. **METHINKS** or **-THINK-ETH**, it seems to me. **METHOUGHT**, it appeared to me. **TO THINK MUCH OF**, to hold in esteem; to esteem. **TO THINK NOTHING OF**, to set no value upon; to have in no esteem; to deem easy of accomplishment. **THINK SCORN**, in *OE.*, to disdain.—**SYN.** of 'think': to cogitate; judge; conclude; determine; intend; imagine; conceive; fancy; muse; meditate; recollect; observe; consider; doubt; deliberate: estimate; believe; esteem; expect; guess; reflect; ponder; contemplate; suppose.

THIRD, a. *thērd* [AS. *thridda*; Icel. *thrīdi*; Ger. *dritte*; Goth. *thrīdja*; Gr. *tritōs*; L. *tertius*, third]: the ordinal of three; next after the second: **N.** one part of three; the $\frac{1}{3}$ part of a second: in *music*, name given to two different musical intervals, the major *third* being the interval between a note and its mediant, as between C and E, and comprising four semitones, while the minor *third* comprises but three semitones, as from A to C. **THIRD'LY**, ad. *-lī*, in the third place. **THIRD-BOROUGH**, in *OE.*, an under-constable. **THIRD ESTATE**, the commons—the lords spiritual and temporal being the other two: in *F. hist.*, the *Tiers Etat* (q v.). **THIRD-RATE**, a. inferior.

THIRD ORDER: see **FRANCISCANS**: **TERTIARY**.

THIRDS, n. plu. *thērdz*: a part of wheat when made into flour: see under **WHEAT**.

THIRDS, in Law: term denoting the portion of an estate of a deceased husband in which the widow has a life-interest: see **DOWER**.

THIRL, v. *thērl* [AS. *thyrel*, a hole; Ger. *thür*, a door; Bav. *tür* and *tirl*, a door, a hole; Icel. *thirla*, to pierce; Goth. *thairh*, through]: in *Scot.* and *OE.*, to pierce a hole through; to perforate; to wound; to cause to vibrate or tingle; to thrill. **THIRL'ING**, imp. **THIRLED**, pp. *thērlēd*.

THIRL, v. *thērl* [OHG. *drigil*; Icel. *thrall*, a slave]: to bind or restrict in some way, particularly as to where one's corn ought to be ground; to enslave; to enthrall. **THIRL'ING**, imp. **THIRLED**, pp. *thērlēd*. **THIRLAGE**, n. *thērl'āj*, in *Scots law*, a kind of servitude by which tenants or proprietors of lands were compelled to get their grain ground at a particular mill. Thirlage is extinguished by the ruin of the mill, or by exemption from this restriction for 40 years: see **MULTURE**.

THIRLING—THIRST.

THIRLING, n. *thér'l'ing*: in *min.*, a worked space connecting the rooms of a mine.

THIRLWALL, *thér'l'wal*, CONNOP, D.D.: English bishop and historian: 1797, Feb. 11—1875, July 27; b. Stepney, England. He was educated at Cambridge, receiving his bachelor's degree 1818, with fellowship and chancellor's medal, and was tutor. After studying law and three years' practice, he turned to the priesthood, was ordained 1828, and became rector of Kirby-under-Dale, Yorkshire. He had translated Schleiermacher's critical work on St. Luke's gospel, and now, with Archdeacon Hare, put forth 2 vols. of *Niebuhr's History of Rome* (1828). This aroused much interest in itself, also in view of the sweeping nature of the method of historical criticism introduced to English readers. His *History of Greece* (1835–47) ranks with Grote's later production as masterly. In 1840 he was raised to the see of St. David's, resigning 1874 on account of infirmity. He made a remarkable speech in the house of lords on the Irish Church; and had part in the Old Test. revision. He was buried in Westminster Abbey.—His *Literary and Theol. Remains* and *Letters to a Friend* have been published.

THIRSK, *thèrsk*: town of England, in N. Riding of Yorkshire; on the Codbeck, affluent of the Swale, 23 m. n.w. of York. It contains an old, large, and handsome Gothic church; and has manufactures of leather and saddlery.—Pop. (1881) 3,337; (1891) 6,584.

THIRST, n. *thèrst* [Goth. *thaurusus*, dry: Icel. *thurr*; Ger. *dürr*, dry: Dan. and Sw. *törst*; Icel. *thorsti*, thirst: Ger. *durst*, thirst: Gr. *tersomai*, I dry up]: a feeling of dryness in the mouth or throat, and desire for water or some liquid to quench it; a painful sense caused by the want of drink; eager desire after a thing wanted; vehement eagerness: V. to feel the want of a liquid, as water; to suffer from the want of drink; to have vehement desire for a thing. **THIRST'ING**, imp. **THIRST'ED**, pp. **THIRST'Y**, a. -*ǝ*, suffering from thirst; very dry; parched; having any vehement desire. **THIRST'INESS**, n. -*nēs*, state of being thirsty; vehement desire for a thing; **THIRST'ILY**, ad. -*lǝ*. **THIRST'ER**, n. -*ér*, one who thirsts.—*Thirst* results from a peculiar state of the mucous membrane of the digestive canal, especially of the mucous membrane and the fauces, caused usually by insufficient supply of liquid. In cases of extreme T. there is a peculiar sense of clamminess in the mouth and pharynx; which, with the other disagreeable feelings, is almost immediately relieved by the introduction of liquid into the stomach, where it is absorbed by the veins. That the T. is relieved by absorption of the fluid, and not by its action as it passes over the mucous membrane, which seems to suffer most, is proved by the facts—(1) that injection of liquids into the stomach through a tube (in cases of wounded œsophagus), and (2) the injection of thin fluids, e.g., water, into the blood, remove the sensation of thirst. An excessive T. is often an important morbid symptom. It may arise from two

very opposite conditions—one a condition of excitement, the other of depression. Whenever the blood is in a state requiring dilution, and is too stimulating, as in fevers and inflammations, there is T.; and, again, in cases of excessive secretion and exhaustion, e.g., in cholera and in the two forms of diabetes, there is great T., which sometimes attends also the lowest stages of prostration in malignant diseases. When there is great loss of the watery portion of the blood by profuse perspiration, caused not by disease, but by hard bodily exercise in a hot atmosphere, as in the case of stokers, mowers, reapers, etc., there is always great T.; and from two to four gallons of beer or cider a day are in such cases taken with impunity; but cold weak tea, without milk or sugar, is one of the most satisfying drinks under these circumstances. Independently of disease, great T. may be induced by use of salted meat or fish, highly-peppered curries, and other stimulating dishes, the ingestion of malt liquors drugged with salt and more pernicious matters, or of gin strengthened by sulphuric acid, etc.

THIRTEEN, n. *thér'tēn* [*three*, and *ten*: Dut. *dertien*; Dan. *tretten*; AS. *threotyne*, thirteen]: ten and three; one more than twelve. THIR'TEENTH, a. *-tēnth*, the ordinal of thirteen; next after the twelfth: N. one of 13 equal parts.

THIRTEEN AMERICAN COLONIES, THE: see CONFEDERATION OF THE THIRTEEN AMERICAN COLONIES: also, CONSTITUTION OF THE UNITED STATES: UNITED STATES (*History*).

THIRTY, a. *thér'tī* [AS. *thrittig*; Dan. *tredive*; Dut. *dertig*; Icel. *thrjátíu*]: three times ten; one more than twenty-nine: N. the sum of three times ten. THIR'TIETH, a. *-ēth*, the ordinal of thirty: N. one of 30 equal parts. THIRTY-NINE ARTICLES: see ARTICLES, THE THIRTY-NINE. THIRTY-TWO-MO, contracted into 32mo: see PAPER. THIRTY TYRANTS, (a) in *Greek history*, a body of 30 rulers at Athens, invested with sovereign power by the Spartan conquerors at the close of the Peloponnesian war. Their government, which was a veritable reign of terror, lasted only one year, B.C. 404–5. (b.) THIRTY TYRANTS of the Roman empire, a set of military usurpers who sprang up in different parts of the empire during the 15 years (253–268) of the reigns of Valerian and Gallienus; and who, amid the wretched confusions of the time, endeavored to establish themselves as independent princes. The name is borrowed from the Thirty Tyrants at Athens, but, in reality, historians can reckon only 19—Cyriades, Macrianus, Balista, Odenathus, and Zenobia, *in the East*; Postumus, Lollianus, Victorinus and his mother Victoria, Marius, and Tetricus, *in the West*; Ingenuus, Regillianus, and Aureolus, in Illyricum and the countries about the Danube; Saturninus, in Pontus; Trebellianus, in Isauria; Piso, in Thessaly; Valens, in Achaia, Æmilianus, in Egypt; and Celsus, in Africa.—See Niebuhr's *Lectures on Roman History*, and Gibbon's *Decline and Fall of the Roman Empire*.

THIRTY YEARS' WAR.

THIRTY YEARS' WAR: properly an uninterrupted succession of wars (1618-48) in Germany, in which Austria, the most of the Rom. Cath. princes of Germany, and Spain, were engaged on one side throughout, but against different antagonists. This long strife had its origin in the quarrels between the Rom. Catholics and the Protestants of Germany, and the attempts of the former, who were the more powerful body, to deprive the latter of whatever liberty of worship they had obtained. The severe measures taken by the emperor, the head of the Rom. Cath. party, against the Prot. religion, led also to strictures on their civil rights, and it was to protect their political as well as their religious liberties that the Protestants formed a union, 1608, May 4, with Frederick IV., Elector Palatine, at its head. The rival union of the Rom. Cath. powers, under the leadership of the Duke of Bavaria, followed 1609, July 11. In Bohemia, the great preponderance in numbers (two out of three) and influence of the Protestants had forced from their Austrian king an edict of toleration (1609, July 11), which was at first faithfully observed; but during the reign of Matthias, sundry violations of it were made with impunity; and as the influence of Ferdinand of Styria (see FERDINAND II.), his successor, began to be felt in more flagrant partiality to the Rom. Catholics, the kingdom became a scene of excitement; three of the Rom. Cath. party were thrown from the window of the Bohemian council-chamber at Prague, and ultimately Ferdinand was deposed, and Frederick V., Elector Palatine, chosen in his stead (1619); and Count Thurn, at the head of an insurgent army, repeatedly routed the imperial troops, and actually besieged the emperor in Vienna. The Rom. Cath. princes, though as apprehensive as their opponents of the encroaching policy of Austria, crowded to the emperor's aid; and while the Prot. union and James I. of Great Britain held aloof from Frederick, whose sole allies were Bohemians (under Thurn), Moravians, Hungarians, and a Piedmontese contingent of 3,000 (under Count Mansfeld), a well-appointed army of 30,000, under Duke Maximilian, advanced to support the Austrians, and totally routed Frederick's motley array at Weissenberg, 1620, Nov. 8, near Prague, afterward reducing the Upper Palatinate, while an army of Spaniards under Spinola ravaged the Lower Palatinate, and the Saxons (in alliance with the emperor) occupied Lusatia. The Bohemians were now subjected to frightful tyranny and persecution; a similar policy, though more moderate, was adopted toward the people of the Palatinate—the Prot. union standing aloof, and subsequently dissolving, through sheer terror. But the indomitable pertinacity and excellent leadership of Count Mansfeld and Christian of Brunswick, two famous partisan leaders who ravaged the territories of the Rom. Cath. league, and the forced cession to Bethlem Gabor of large portions of Hungary and Transylvania, did much to equalize the success of the antagonistic parties.

Here the war might have ended; but the fearful tyranny of Ferdinand over all the Protestants in his dominions

THIRTY YEARS' WAR.

(Hungary excepted) drove them to despair, and the war advanced to its second phase. Christian IV. of Denmark, smarting under injuries inflicted on him by the emperor, and aided by a British subsidy, came to the aid of his German co-religionists 1624; and, being joined by Mansfeld and Christian of Brunswick, advanced into Lower Saxony, while the emperor, hampered by the political jealousy of the Rom. Cath. league, was unable to oppose him. But when, by the aid of Wallenstein (q.v.), a powerful and effective army had been obtained, and the leaguers under Tilly (q.v.), in co-operation with it, had marched northward, the rout of the Danes by Tilly at Lutter (1626, Aug. 17), and of Mansfeld by Wallenstein at Dessau (1626, Apr. 1, 11, and 25), again prostrated the Protestants' hopes; yet a gleam of comfort was obtained from the victorious raid of Mansfeld through Silesia, Moravia, and Hungary; though his scheme for an insurrection in Hungary failed, and his death soon afterward, at Zara, freed the emperor from a formidable and irreconcilable enemy. The combined imperialists and leaguers meantime had overrun n. Germany and continental Denmark, and ultimately compelled King Christian to conclude the humiliating peace of Lübeck (1629, May 12). This second great success seems to have turned Ferdinand's head; for, not content with a still more rigorous treatment of the Protestants, and the promulgation of the *Restitution Edict*, which seriously offended even the Rom. Catholics, he stirred up Poland against Sweden, and insulted Gustavus Adolphus, both personally and in the persons of his ambassadors—insolent impertinences which he soon saw bitter reasons to regret. The Rom. Cath. league now forced him to reduce his army, and supplant Wallenstein by Tilly; while France was inciting Gustavus to the willing task of aiding the Protestants in Germany.

The war entered its third phase by the landing of the Swedes at Usedom 1630, June, and their conquest of Pomerania and Mecklenburg. Gustavus, by a little wholesome pressure, induced the Elector of Brandenburg to aid him; and though unable to save Magdeburg (q.v.), he marched to join the Saxons; completely routed Tilly at Breitenfeld 1631, Sep. 17; victoriously traversed the Main and Rhine valleys; again routed Tilly on the Lech (1632, Apr. 5), and entered Munich. By the judicious strategy of Wallenstein he was, however, compelled to return to Saxony, where he gained the great victory of Lützen (q.v.); but his death, depriving the Protestants of the only man who could force the confederate powers to preserve unity of action, was a severe blow to their cause; though the genius and indefatigable zeal of his chancellor, Oxenstierna (q.v.), and the brilliant talents of the Swedish generals, preserved the advantages that they had gained, till the crushing defeat of Bernard of Weimar at Nordlingen (1634, Sep. 6) restored to the emperor a preponderating influence in Germany. Saxony now made peace at Prague (1635, May 30), obtaining such satisfactory terms for the Lutherans that the treaty was within three months adhered to by all the Ger-

man princes of that sect, and the Calvinists were left to their fate.

Final success on the part of Austria now appeared to demand only one more strenuous effort; but Oxenstierna, resolved to preserve to Sweden her German acquisitions, propitiated Richelieu (q.v.), by resigning to him the direction of the war; and the conflict advanced into its final and most extended phase. The emperor, allied for offense and defense with the Lutherans, was now assailed also through his ally Spain, which was attacked on her own frontier, in the Netherlands, and in Italy; Bernard of Weimar fighting independently, with the view of obtaining Alsace for himself, opposed the leaguers; while the Swedes, under Baner, held n. Germany, and by frequent flying marches into Silesia and Bohemia, distracted their opponents, and prevented them, after their successes over Duke Bernard, from proceeding with the invasion of France. The great victory of Baner over the Austrians and Saxons at Wittstock (1636, Oct. 4) restored to Sweden the victor's wreath that she had lost two years before; and from this time, especially under Torstensohn (q.v.) and Königsmark, the Swedes were always successful, adding a second victory of Breitenfeld (1642, Nov. 2), one at Yankowitz (1645, Feb. 14), and many of less note, to their already long list of successes, carrying devastation and ruin into the hereditary territories, even to the gates of Vienna, defeating the best generals of the empire, till, from a profound feeling of inability to check them, the Austrians hardly dared appear n. of the Danube. On the Rhine, the leaguers at first had great success—the Weimar troops, now in French pay, were almost exterminated at Dutilingen (1643, Nov. 24); but after the Spanish power had been thoroughly broken in the Netherlands by Condé, the French were reinforced on the Rhine, and under Condé and Turenne (q.v.) rolled back the leaguers through the Palatinate and Bavaria, and revenged at Nordlingen (1645, Aug. 3) the former defeat of the Swedes. The emperor was now deserted by all his allies except the Duke of Bavaria, whose territories were already mostly in the hands of Turenne and Wrangel; and a combined invasion of Austria from the w. and n. was on the point of being executed, when, after seven years of diplomatic shuffling, with an eye to the changing fortunes of the contest, the peace of Westphalia (q.v.) put an end to this terrible struggle.

THIS, a. *this*, plu. THESE, *thēz* [AS. *thes*; Dut. *deze*; Ger. *dieser*; Icel. *thessi*, this]: that is present or nearest in *time* or *place*; that is just mentioned. BY THIS, after such an interval; by this time. *Note*.—THIS is sometimes opposed to THAT, as 'this and that:' when speaking of things mentioned before, *this* refers to the second and *that* to the first—but *former* and *latter* are now commonly used instead of *that* and *this*.

THISBE, n. *thīz'bē* [L.]: Babylonian maiden described by Ovid as committing suicide because she believed her lover, Pyramus, to be dead.

THISTLE.

THISTLE, n. *this'l* [Icel. *thisill*; Sw. *tistel*; Ger. *distel*, a thistle]: prickly plant of the genus *Carduus*, ord. *Compositæ*, sub-ord. *Cynaroceph'älæ*—the large plant usually called the Scotch thistle is *Onopordon acan'thium* (see below): the national emblem of Scotland. **THISTLY**, a. *this'li*, overgrown or abounding with thistles; prickly. **THISTLE-DOWN**, n. the fine feathery down attached to the seeds of thistles. **THISTLE FINCH**, n. *-finsh*, the goldfinch.

THIS'TLE: plant of several genera of the nat. order *Compositæ*, with spinous leaves, imbricated involucre, and heads of flowers. The flowers are sometimes large, generally purple, rarely white or yellowish. Recent botanists have made two genera—the true T. (*Carduus*), in which the pappus is composed of simple hairs, and the Plume T. (*Cirsium*, including the former *Cnicus*), in which the pappus is feathery.—The species of both genera are numerous, and are found in most of the temperate and cold parts of the n. hemisphere, annual, biennial, and perennial herbaceous plants of considerable size.—The **MILK T.** (*Silybum Marianum*), biennial native of the old world, attains a height of 4–6 ft., and is remarkable for the milky veins of its large waved leaves. The young leaves are sometimes used as a spring salad. Blanched leaves are used in winter salads. They are used also as a boiled vegetable, with the young stalks, after these have been peeled and soaked in water to extract part of their bitterness. The root is used as Salsify (q.v.). The creeping Plume T. (*Cnicus arvensis*), known in the United States as the **CAN-ADA T.**, is from Europe. It is 1–3 ft. high, with creeping roots, pinnatifid leaves and numerous small heads of flowers, and is a very troublesome weed. The **COMMON T.** (*Cirsium lanceolatum*) is well known by its large purple heads, of which all the scales have spreading sharp tips; the leaves run down the stem in prickly wings; it also is an introduced species. *Cirsium oleraceum* is a native of n. Europe, distinguished by its yellowish flowers, which are surrounded with large yellowish involucre bracts; the young leaves are used as a culinary esculent. The similar **YELLOW T.** of the Atlantic coast (sometimes purplish) is *Cirsium horridulum*. The **BLESSED T.** (*Carduus benedictus* of the pharmacopœias, *Cnicus benedictus* of modern botanists) is a native of the Levant and of Persia, resembling in appearance a *Centaurea*, with yellow flowers enveloped in leaves, and abounding in a gossamer-like down. The whole plant has a very bitter and disagreeable taste; and, besides a bitter extractive, contains much sulphate and muriate of potash and sulphate of lime. It is a powerful laxative- tonic medicine, and a strong decoction of it readily induces vomiting.—The **COTTON T.** (*Onopordon*) is a distinct genus, known by its receptacles being destitute of bristles, and coarsely and deeply honey-combed. The common Cotton T. (*O. acanthium*), native of Europe, but rarely wild in Scotland, is, nevertheless, generally called by gardeners and others the **SCOTCH THISTLE**. The national emblem of Scotland is not, probably any particular species of T., as botanically distinguished; though the stemless T.

THISTLE—THISTLEWOOD CONSPIRACY.

(*Cnicus acaulis*, or *Cirsium acaule*) is in many districts of Scotland so designated. According to the common tradition, the Danes (or Norsemen?) came upon the Scots unperceived in the dead of night; and, halting while their spies were trying to discover the undefended points of their opponents' camp, one of the spies chanced to tread upon a T. of this species, and the loud imprecation which the sudden pain evoked aroused the unsuspecting Scots, who at once attacked the invaders, gained a complete victory, and dubbed the plant which had been the means of their success, the Scotch Thistle. The Cotton T. has large elliptic leaves, and a broadly-winged stem. The young fleshy root and the stem, while still tender, are in many places boiled and eaten. The expressed juice of the plant was formerly reckoned good for cancerous sores and cutaneous eruptions.—Wild species in the United States are the Pasture T. (*Cirsium pumilum*) with single, very large, fragrant, purple heads, rarely white; the Swamp T. (*C. muticum*), 3-8 ft. high; flower-heads purple and rather large, and mostly unarmed, like the leaves; the Tall T. (*C. altissimum*), 3-10 ft., from Penn. s.; the Virginia T. s. and w., with long naked peduncle at top; and the Two-colored T., 3-6 ft., with leaves green above and white beneath.—Plants of the genus *Echinops*, which belongs to a very different section of the *Compositæ*, are often seen in flower-gardens, where they are known as Thistles. The name is also, generally with some addition, bestowed on many plants which have a spinous character. *Centaurea Calceitrapa* is commonly known as the STAR T. (see CENTAUREA).—The CARLINE T. (*Carlina vulgaris*) is common in dry hilly pastures in parts of Britain.

THISTLE, ORDER OF THE; called also the ORDER OF ST. ANDREW: a Scottish order of knighthood, instituted 1687 by James VII. (II. of England). The earliest known mention of the thistle as the national badge of Scotland* is in the inventory of the effects of James III., who probably adopted it as an appropriate illustration of the royal motto, *In defense*. Thistles occur on the coins of James IV., Mary, James V., and James VI.; and on those of James VI. they are for the first time accompanied by the motto, *Nemo me impune lacesset*. On the institution (inaccurately called the revival) of the Order of the Thistle by James, statutes were issued, and eight knights nominated; but the patent for the institution never passed the great seal. After falling entirely into abeyance during the reign of William and Mary, the order was revived by Queen Anne 1703, Dec. 31.

THISTLEWOOD CONSPIRACY: conspiracy formed 1820 by Arthur Thistlewood, with other profligate adventurers, to overturn the government of Great Britain and assassinate the ministers of the crown. The opportunity was to be taken of the funeral of George III.—when all the military would have left London for Windsor—to take possession of London and plunder the shops. The ministers were to be massacred when assembled at a cabinet dinner, and the cannon in Gray's Inn Lane and the Artillery

THITHER—THOLOBATE.

Ground were at the same time to be seized. A provisional government was to be established, and means taken to intercept communication with Windsor and Woolwich, and prevent any one from leaving England by sea. The conspirators were surprised, and most of them apprehended by the police, Feb. 23, the day appointed for the massacre of the ministers. A few turned king's evidence against the rest; and Thistlewood and four others suffered death for treason.

THITHER, ad. *thith'ēr* [AS. *thider*, thither]: to that place; opposed to *hither*; to that end or point. **THITH'ERWARD**, ad. *-wērd*, or **THITH'ERWARDS**, *-wērdz*, toward that place. To **RUN HITHER AND THITHER**, to run this way and that, as if perplexed.

THI'VÆ: see **THEBES**, in Bœotia.

THLINKETS, *thlĭnk'ĕts*: aboriginal race of Alaska, occupying the coast from Mt. St. Elias to the Simpson river and Sitka, and the neighboring islands. Their name is formed from the word *t'linket* in their own tongue, which means *man*. Their language has no relation to the languages of the other races in contact with the Thlinkets.

THO, ad. *thō* [AS. *thonne*, then]: in *prov.* and *Old Eng*, then.

THO', *thō*: an abbreviation of **THOUGH**.

THOLE, v. *thōl* [AS. *tholian*; Icel. *thola*, to suffer, to bear]: in *OE.* and *Scot.*, to bear; to endure; to put up with; to undergo. **THO'LING**, imp. **THOLED**, pp. *thōld*.

THOLE, n. *thōl* [Gr. *tholos*, a dome]: in *anc. arch.*, a round building with a conical roof; in *arch.*, the scutcheon or knot in the midst of a timber-vault.

THOLE, or **THOWEL**, or **THOWL**, n. *thōl* [AS. *thol*, a thole: Icel. *thollr*, a fir-tree, a pine: Dut. *dol*, an oar-pin: Norw. *toll*, a thole]: a pin inserted into the gunwale of a boat to keep the oars in place when rowing—if there be two to each rowlock, the oar is worked between them—if but one, the oar is kept in place by a thong or lanyard, or by a band or socket.

THOLEN, *tō'lĕn*: island in the Netherlands, province of Zeeland, bounded s. by the Easter Scheldt; containing about 34,000 acres of rich land, and defended from floods by strong dikes whose borders are planted with trees. Wheat, rye, barley, oats, beans, and potatoes are extensively grown. The annual produce of madder reaches a million lbs., and of flax 400,000 lbs. Horses, cattle, sheep, and swine are kept in large numbers. Tholen, chief town (pop. 2,540), is in the s.e. corner of the island.—Pop. of island, about 14,000.

THOLOBATE, n. *thōl'ō-bāt* [Gr. *tholos*, an arched roof: *basis*, a basis]: in *arch.*, that part of a building on which a cupola is placed.

THOLUCK.

THOLUCK, *w'lék*. FRIEDRICH AUGUST GOTTFRED. German Prot. theologian and preacher of wide repute: 1799, Mar. 30—1877, June 10; b. Breslau. He studied, first, at the univ. of his native city; and afterward at Berlin, where oriental studies claimed his special regard, whose first-fruits appeared in *Suffismus sive Theosophia Persarum Pantheistica* (Berl. 1821). The state of his religious opinions may be conceived from his own confession that when he left Breslau he thought nearly as much of Mohammedanism as of Christianity. The influence of Neander, however, and still more, of Baron von Kottwitz, philanthropic Christian nobleman of Silesia, produced a radical change in his convictions and modes of thought; and as early as 1823 he appeared as a champion of evangelical doctrines in *Wahre Weihe des Zweiflers* (True Consecration of the Skeptic; 7th ed. Hamb. 1851—under the title *The Doctrine of Sin and the Propitiator*; transl. into English, French, Danish, Swedish, and Dutch). Next year he published *Auslegung des Briefs an die Römer* (Exposition of the Epistle to the Romans; Berl. 1824; 4th ed. 1842; also transl. into Eng. and other languages). About the same time he was appointed extraordinary prof. of theology at Berlin; and 1825 he visited England. On his return, 1826, he succeeded Knapp as ordinary prof. of theology at Halle, where, with the exception of a brief official sojourn at Rome, he remained. T.'s position at Halle was far from pleasant at first, for the majority of the theological faculty, among whom was Gesenius, were very decided rationalists, and did much to make the new professor's position uncomfortable; but T., though not a man of the profoundest intellect, was filled with a quiet, earnest, resolute *faith*; and he continued his evangelical labors against all opposition, until they reached full success. The Univ. of Halle is at present, mainly owing to T., as thoroughly Christian and evangelical, though not, perhaps, so strictly orthodox, as in the days of Francke. He wrought this result largely by the beauty and power of his personal character, and by his earnest preaching of Christ. In theology T. held to a liberal orthodoxy, or rather evangelicalism, which laid stress on personal experience rather than on rigid doctrinal tenets. He opposed externality in religion, whether of rationalism, sacramentarianism, or orthodoxy. He had a wide and generous culture. His kindness (with that of his wife) toward students, especially *poor* students, was proverbial, and gained for him wide fame and a deep personal love. In 1843 he was chosen a member of the consistory of Magdeburg, where he became superior councilor 1867. Besides the works above mentioned are: among his exegetical writings *Praktischer Commentar zu den Psalmen* (Practical Commentary on the Psalms; Hamb. 1843); *Commentar zum Evangelium Johannis* (Commentary on the Gospel of John; 6th ed. Hamb. 1844); *Commentar zum Briefe an die Hebräer* (Commentary on the Epistle to the Hebrews; 3d ed. Hamb. 1850); and *Philosophisch-theologische Auslegung der Bergpredigt* (Philosophico-theological Exposition of the Sermon on the Mount; 3d ed. Hamb.

1845). Of his dogmatic writings, the principal are in *Lit-
erarischer Anzeiger für Christliche Theologie und Wissen-
schaft*, a journal now discontinued; and in his *Glaubwür-
digkeit der Evang. Geschichte* (Credibility of the Gospel His-
tory; Hamb. 1837), treatise against Strauss's *Leben Jesu*.
Among his contributions to history of theology are: *Ver-
mischte Schriften grössten theils apologetischen Inhalts* (2
vols. Hamb. 1839); *Der Geist der Luth. Theologen Witten-
bergs im 17. Jahrh.* (The Spirit of the Lutheran Theologians
of Wittenberg in the 17th C., Hamb. 1852); *Das Academische
Leben des 17. Jahrh.* (The Academic Life of the 17th C.;
Halle 1853-4); and *Geschichte des Rationalismus* (History
of Rationalism), in several parts—notably a *Vorgeschichte
des Rationalismus*. Besides these are several volumes of
sermons.

THOMASISM, n. *tō'mă-izm*, or THO'MISM, n. *-mizm*: the
doctrines of St. Thomas Aquinas. THO'MIST, n. *-mĭst*, a
follower of St. Thomas Aquinas, a distinguished school-
man of the 13th c., who taught the doctrines of original sin
and free grace, and condemned the doctrine of the immac-
ulate conception (see AQUINAS).

THOMAS, CHRISTIANS OF SAINT: remarkable religious
community settled from a very early date on the Malabar
coast of the Indian peninsula; named from the apostle
Thomas, who, according to a very ancient but quite un-
supported tradition, preached in India, and is regarded as
the apostle of that country. As early as the 6th c., the
well-known voyager Cosmas Indicopleustes, reported nu-
merous Christian communities in India, under the pas-
toral care of bishops sent from Persia. To these Persian
bishops it may be attributed that the Indian Christians, like
those of what may be called the mother church of the Per-
sian kingdom, lapsed into the Nestorian heresy, which,
after the decrees of Ephesus and Chalcedon, having been
suppressed by the civil laws of the Roman empire, was
driven beyond the limits of Roman authority, and found
its favored seat among the Persians. This sect had their
seat almost entirely along the Malabar coast, and extended
from the s. cape; Comorin, as far as Calicut; and they are
found scattered throughout this length over the space from
the w. declivity of the Ghauts to the sea. From the time of
their lapsing into Nestorianism, their bishops were or-
dained by the Nestorian patriarch of Babylon, and they pos-
sessed certain civil rights under the successive dynasties in
s. India. On the whole, however, they were much op-
pressed; and on the arrival of the Portuguese 1598, the
Christians of St. T., though Nestorians, regarded them as
their deliverers. Nevertheless, the diversity of creed was
at once recognized by the western missionaries, and at-
tempts were made by the Franciscans, Dominicans, and
finally Jesuits, to reconcile them to the Roman Church. A
union, more or less real, was effected by a synod at Diam-
per, 1599; and one of the Jesuit Fathers, Padre Roz, was
named bp. 1601. This union, however, was not lasting;
they fell away again from the Roman communion, and the
expulsion of the Portuguese from Cochin by the Dutch

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completed the disruption. A considerable number, however, were again united to Rome through missionaries of the Carmelite order; and toward the close of the 17th c., Emperor Leopold I. obtained leave of the Dutch to send a bp. and 12 priests of that order to the Malabar coast. Those missionaries were hindered in their work both with the schismatics and with the heathen by the intrigues and jealousies of the Portuguese. In later times, the Christians of St. T. have mostly been absorbed in the native Christian population. Their tenets were in the main those of the Nestorians of Chaldea and Mesopotamia, about whose precise details there has been controversy; and conflicting statements have been made, according to the religious views of travellers or missionaries. Much of this conflict of testimony arises from a confusion of names. See NESTORIAN.

THOMAS, *tōm'as*, or DIDYMUS, *dīd ī-mūs* ('Twin'): apostle of Jesus Christ: probably a Galilean (Jn. xxi. 2), though tradition refers his birth to Antioch in Syria. Tradition further speaks of him as preaching to the Parthians, the Persians, and suffering martyrdom in India, where the anciently named Thomas Christians, otherwise called Nestorians of India, point to his grave at Meliapur, contrary to another statement that he was buried in Edessa, Mesopotamia, whence it is said his relics were removed to Ortona, Italy. Of a piece with the fantasy of identifying the lost Ten Tribes with Amer. Indians was a priestly theory of his visiting America and of his apotheosis as an Aztec god. The New Test. associates him with Matthew and with Philip, and narrates his interview with the risen Lord, when he desired proofs of the resurrection. An unwarrantable inference is drawn from this that he was of a skèptical nature. He felt it requisite to have visible proof of an amazing fact—such proof as had been given to the other disciples.

THOMAS, EDITH MATILDA: poet: b. Chatham, O., 1854. She was educated at the Normal Institute of Geneva, O., and has contributed verses to the *Atlantic Monthly* and other magazines. A collection of her poems was pub. 1885 under the title *A New Year's Masque*; another collection, *Lyrics and Sonnets*, appeared 1887; and *Babes of the Year* 1887. She published a volume of prose sketches of 'aspects of nature,' entitled *The Round Year*, 1886. Her themes are mostly rural and pastoral.

THOMAS, GEORGE HENRY: soldier: 1816, July 31—1870, Mar. 28; b. Southampton co., Va. He left the study of law for a cadetship at West Point, where he graduated with honor 1840, and became 2d lieut. of artillery, gaining a brevet in the Fla. Indian war. On duty in Tex. at the beginning of the Mexican war, he was brevetted capt. for gallantry at Monterey; and received special mention and was brevetted major for effective service at Buena Vista. He was instructor of artillery and cavalry at West Point 1851–54; and the following year maj. of the 2d cavalry, with officers who afterward became noted in the Confederate army. While he was on furlough in New York 1861, his regt. was surrendered by treachery in Tex. and

returned n. *via* that city; he reorganized it for Union service, never wavering in his loyalty, though of southern birth. At the head of a brigade, he defeated a militia force in Va. near the Potomac; and Aug. 17 he was appointed brig.gen. of vols. in the dept. of the Cumberland, then in confusion and danger. He organized raw material into the 1st brigade at Camp Dick Robinson; and at the battle of Mill Springs was gained the first cheering victory. He participated in all the campaign ending in Shiloh; was promoted maj.gen. 1862, Apr. 25; and succeeded Gen. Grant in command of the Army of the Tennessee and of the right wing in Halleck's advance on Corinth (1862, Apr. 9—May 30), but at his own request was returned to his former command of a division in Buell's army, because he had learned that Gen. Grant felt that he had suffered an injustice in the removal. This magnanimous act was characteristic of this chivalrous soldier. He commanded the centre, 5 divisions, when the Union forces were massed at Nashville to meet Gen. Bragg. At the battle of Stone river, 1862, Dec. 31—1863, Jan. 2, Gen. Thomas's wonderful ability and persistency in holding his ground were conspicuous, as repeatedly afterward; except for this, and his fearless assault the third day, the battle would have been lost. After flanking movements, resulting in the occupation of Chattanooga by the Union forces, occurred the great battle of Chickamauga (q.v.), where for more than five hours, with 25,000 men in a semicircle of which T. was the centre, he withstood the repeated assaults of the 65,000 Confederates flushed with their victory over the rest of the Union army. It is said that the result of this contest destroyed the over-confidence of the enemy ever after. Gen. Thomas (known from that day as the 'Rock of Chickamauga'), now in command of the Army of the Cumberland, sustained the critical siege of Chattanooga—replying to Gen. Grant, 'We will hold the town till we starve,' though he had but 5 days' provision for 50,000 mouths. The battles of Mission Ridge and Lookout Mt., Nov. 23-25, ensued; he carrying the Ridge and driving the enemy in confusion: see CHATTANOOGA, BATTLES OF. Then followed the Atlanta campaign of 1864, in which he commanded two-thirds of Gen. Sherman's army, the centre, in 100 days' fighting—his troops the first to enter Atlanta. When Gen. Hood threatened the base of supply, T. was sent to Nashville, where his usual wise caution in completing all needed organization before striking his sure blows led to the usual impatience at Washington; an order was even made out to suspend him from command, but Gen. Grant, who knew him well, succeeded in holding it back until Dec. 15 and 16, when, with all the disadvantages of poor supplies and equipments, bad weather, and crossing rivers without pontoon-bridges, Gen. T. fought the battle of Nashville, completely routing Gen. Hood, and practically ending the war in the west. For this he was made maj.gen. U. S. army, and received the thanks of congress, and a gold medal from the Tenn. legislature. Cavalry operations in Ala. and Ga. followed till the end of the war, after which he commanded the division

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of the Pacific until his death. He was buried at Troy, N. Y. —A man of admirable personal qualities, and of much literary and scientific cultivation, he was distinguished by a lofty integrity and honor, and was recognized as a model soldier, in whom his men had a just confidence that rendered them invincible.—A bronze equestrian statue of Gen. T., by J. Q. A. Ward, at Washington, is a testimony from his soldiers. His biography by Thomas B. Van Horne was pub. 1882.

THOMAS, HIRAM WASHINGTON, D.D.: pastor of the People's Church, Chicago: b. Hampshire co., W. Va., 1832, Apr. 29. After education at the Cooperstown Acad. and the Berlin Theol. Seminary, he was appointed to stations of the Meth. Episc. Church in Penn. 1851-55, and in Iowa 1855-69, after which he had charge successively of the Park Ave. and the First Meth. Episc. Churches, Chicago, 1869-75, a church in Aurora, Ill., and 1877-80 the Centenary Church in Chicago. In 1878 he was warned by the conference to give assurances in regard to certain liberal opinions or to retire; refusing, he was tried for heresy 1880 and deposed. The independent People's Church was soon formed and chose him pastor.

THOMAS, JOHN: soldier: 1725-1776, June; b. Marshfield, Mass., where, and in Kingston, he practiced medicine. In 1746 he was surgeon of a regt. sent to Nova Scotia, and the next year on the staff of Gen. William Shirley, becoming col. of provincial troops 1759. He commanded a regt. under Gen. Amherst at Crown Point 1760, and the left wing of the army under Col. Haviland in the expedition that captured Montreal. After resuming his profession in Kingston, Mass., for some years, he enlisted a regt. of vols. 1775, and was made brig.gen. by congress, but withdrew from service until a resolution of congress, following highly commendatory letters from Gen. Washington and others, gave him his merited precedence. In the siege of Boston he was at the head of a brigade, and his action in seizing Dorchester Heights compelled the British to evacuate the city. Two days afterward he was promoted maj.gen., and subsequently commanded the Canada forces, with which, reduced to less than 700 effective men against a reinforced enemy, he was compelled to retire from Montreal to Three Rivers, near which he died of the prevalent smallpox, from which his troops were suffering.

THOMAS, JOSEPH, M.D.: philologist and editor: b. Cayuga co., N. Y., 1811, Sep. 23. He was educated at Yale Coll. and at the Rensselaer Polytechnic Institute, Troy, N. Y.; studied medicine and practiced in Philadelphia. He was prof. of Greek and Latin in Haverford Coll., and spent nearly 2 yrs. in India and Egypt, studying Sanskrit, Arabic, and other languages. He edited biographical and geographical vocabularies for *Webster's Dictionary*, was one of the editors of *Lippincott's Gazetteer*, and sole editor of a *Medical Dictionary* and a *Dictionary of Biography and Mythology*. He d. 1891, Dec. 24.

THOMAS, St. (island): see ST. THOMAS.

THOMAS—THOMASIUS.

THOM'AS, THEODORE: musician: b. Esens, Hanover, Germany, 1835, Oct. 11. Taught by his father, he played the violin in public at the age of six. In 1845 he came with the family to this country, and performed solos at concerts in New York. Later he was with the Italian Opera Co., visiting the chief cities, and played 1st violin in the tours of Jenny Lind, Sontag, Grisi, and Mario; also orchestral leader in those of La Grange, Piccolomini, and Thalberg, and conductor of Italian and German opera. He began a series of musical soirées in New York, continued until 1869, when he made his first concert tour; also symphony concerts 1864-78. In 1866-73 he gave summer-night concerts in Terrace Garden, in Central Park, and in various cities, introducing Wagner's music—in 1872 founding the Wagner Union to aid in the Baireuth festival of 1875. For four years from 1878, he was director of the College of Music in Cincinnati; excepting these years, he conducted the New York Philharmonic Soc. after 1876, and that of Brooklyn after 1862. He conducted eight musical festivals in Cincinnati, two in Chicago, and one (1882) in New York; also the Amer. Opera Co. More than any other leader he has raised the standard of music in this country. His work was eloquently described by George W. Curtis at a dinner in his honor 1891, in which year, after giving concerts in New York, he removed to Chicago.

THOM'AS, THEODORE GAILLARD, M.D.: physician: b. Edisto Island, S. C., 1831, Nov. 21. He received his medical degree from Charleston Coll. 1852, and then settled in New York, serving in Bellevue Hospital. He has been prof. of obstetrics and women's diseases in the N. Y. Coll. of Physicians and Surgeons, and consulting physician of various hospitals. Besides high repute as a practitioner, he holds high rank as a lecturer on medical science. His *Practical Treatise on Diseases of Women* (1868) has been translated into several languages.

THOMAS À BECKET: see BECKET.

THOMAS À KEMPIS: see KEMPIS.

THOMASITES, n. plu. *tóm'as-īts* [from John Thomas, M.D., b. London, 1805, d. Worcester, Mass., 1871]: name sometimes given to the Christadelphians, from the fact that Dr. Thomas organized them into a separate religious body. They believe that immortality is the reward of the righteous—i.e., of those who receive the truth and are baptized; and that others will perish from existence after punishment proportioned to their misdeeds or lack of faith. They reject the doctrine of the Trinity.

THOMASIUS, *to-má'zē-ūs*, CHRISTIAN: 1655, Jan. 1—1728, Sep. 23; b. Leipzig: German philosopher and jurist. He studied at Frankfurt-on-the-Oder 1675-79, and, returning to his native town, gave lectures on law in a style startlingly independent of the traditions of the schools. In 1687, to the astonishment of his Latin-speaking colleagues, he adopted the German language in his expositions; published his programme for the following year in the

THOMAS THE RYMOUR—THOMASTON.

same tongue; and began a monthly journal, which excited so much opposition that he left Leipzig, and went first to Berlin, and afterward (1690) to Halle, where, under the patronage of the Brandenburg court, his lectures were the means of establishing the university. In this univ., T. became prof. of jurisprudence. The great aim of T. was to harmonize and blend science and life—hence his contempt for hair-splitting subtleties of which nothing could be made; his preference of German to Latin in his academic lectures; his disinclination to all philosophical terminology; his depreciation of the schoolmen; his demand for the freeing of jurisprudence from the control of theology; etc. But particularly he signalized himself as an opponent of trial for witchcraft and punishment by torture. T., as a thinker, rational, practical, independent, and eclectic rather than profoundly systematic, prepared the way for great reforms in philosophy: see his *Geschichte der Weisheit und Thorheit* (History of Wisdom and Folly).—See Luden, *Christian Thomasius* (1805); and works on T. by Dernburg (1865) and Wagner (1872).

THOMAS THE RYM'OUR, or THOM'AS OF ERCILDOUNE, *ér'sil-dón*: earliest poet of Scotland: about 1225–1300. The history of his life and writings is involved in obscurity. He derived his territorial appellation from the village of Ercildoune (now Earlston), in the county of Berwick. Whether the name Rymour (Rimer) was given him from his poetical work, or was a family name, has been somewhat discussed. He appears to have reached the height of his reputation in 1286, when he is said to have predicted the death of King Alexander III.: this singular prophecy is recorded in the *Scotichronicon* of Fordun 1430; also by the historian Boece 1527. He was believed to have derived his prophetic gift from his intercourse with the queen of fairyland, with whom the legend made him a resident during seven years of his early youth, and to whom he was said to have mysteriously returned at last. Compare the myth of TANHÄUSER (q.v.).

T. is famed chiefly for the prophecies attributed to him. Sir Walter Scott believed him the author of the famous romance of *Sir Tristrem*, which is his chief work extant: this authorship, however, is doubted by some. The other poems attributed to him, chiefly descriptive of his interviews with the fairy queen, and his adventures in fairyland, display poetical power of high order. These have been edited by Dr. J. A. H. Murray for the Early English Text Soc. (1876), and by Brandl (1878).

THOMASTON: town in Knox co., Me.; on St. Georges river and on the Knox and Lincoln railroad; 4 m. w.s.w. of Rockland. It has 5 churches, 2 public libraries, graded schools, and 1 weekly and 1 monthly periodicals, and is the seat of the Maine State Prison. It has quarries of granite, and is noted for its extensive manufacture of lime. Pop. (1890) 3,009; (1900) 2,688.

THOMASVILLE—THOMPSON.

THOMASVILLE, *töm'as-vîl*: town, cap. of Thomas co., Ga.; on the Savannah Florida and Western railroad; 200 m. w.-by-s. of Savannah. It is in a cotton, wool, and pine-woods region; is widely known as a popular winter resort and sanitarium for consumptives; has iron-works, machine-shops, and cotton-seed-oil mills; and contains co. court-house, 5 churches, several commodious hotels, public square, the S. Ga. College of Agriculture and Mechanic. Arts Young Female College, Fletcher Institute for Boys, 1 national bank (cap. \$100,000), 1 state bank (cap. \$150,000), 1 savings bank, 1 trust company, and 1 daily and two weekly newspapers. Pop. (1880) 2,555; (1900) 5,332.

THOMISM, *töm'îzm*: in *chk. hist.*, one of the two great schools of scholasticism, the other being Scotism (see SCOTUS, DUNS). It derived its name from its founder, St. Thomas Aquinas (q.v.).

THOMPSON, *tömp'son*: town in Windham co., Conn.; on the New York and New England railroad; 4 m. n.e. of Putnam, 38 m. n.-by-e. of Norwich. It contains several villages, a number of churches, graded schools, and cotton and woolen goods factories.—Pop. (1880) 5,051; (1890) 5,580; (1900) 6,442.

THOMP'SON, Sir BENJAMIN: see RUMFORD, Count.

THOMP'SON, DANIEL GREENLEAF: lawyer and author: b. Vermont, 1850. He graduated at Amherst Coll. 1869; was admitted to the bar in New York, and applied himself mainly to railway law cases. He has been a frequent contributor to magazines; and has treated various speculative themes in a lucid style, in works entitled: *A System of Psychology; The Problem of Evil; The Religious Sentiments; Social Progress*. He was elected (1888) pres. of the Nineteenth Century Club of New York. He died 1897.

THOMP'SON, ELIZABETH: see BUTLER, ELIZABETH SOUTHERDEN.

THOMP'SON, GEORGE: reformer: 1804, June 18—1878, Oct. 7; b. Leeds, England. He was a leader in the agitation for abolition of slavery in the British colonies; visited the United States 1834 to advocate abolition in this country; and during his sojourn, though often in peril for his life from mob violence, was instrumental in establishing more than 150 abolition societies. He revisited America 1851, and again during the secession war: during the latter visit he was honored with a public reception by the house of representatives in Washington. He helped to prevent recognition of the Confederacy by England. He once served in the British parliament as member for the Tower Hamlets (1847). In recognition of his service to the cause of abolition, a fund was raised and presented to him toward the close of his life by admirers in England and America.

THOMP'SON, HUGH MILLER, S.T.D.: Prot. Episc. bishop: b. County Londonderry, Ireland, 1830, June 5. Brought by his parents to Ohio, while yet a child, he was educated in the schools of Cleveland; studied theol. at Nashotah House, Wis., ministered as deacon in Madison, Wis., Maysville, Ky., and missionary in Wis.: as priest at

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Portage and Milwaukee, Wis., and rector in Kenosha, Wis., and Galena, Ill. In 1860 he became prof. of eccles. hist. at Nashotah House, and ed. of the *Amer. Churchman*; 1871 rector of St. James, Chicago; 1872 of Christ Chh., New York, and ed. of the *Church Journal*; 1875 rector of Trinity Chh., New Orleans; 1883 asst. bp., and 1887 bp. of Mississippi. Dr. T. published *Unity and its Restoration* (1860); *Sin and its Penalty* (1862); *First Principles* (1868); *Absolution* (1872); *Copy: Essays from an Editor's Drawer* (1872); *Is Romanism the Best Religion for a Republic?* (1873); *Concerning the Kingdom of God* (1873); *The World and the Logos* (Bedell lectures 1885); *The World and the Kingdom* (1888). He died 1902, May 18.

THOMPSON, JACOB: politician: 1810, May 15—1885, Mar. 24; b. Caswell co., N. C. Having graduated at the Univ. of N. C. 1831, he was admitted to the bar 1834, and practiced law in the Chickasaw country, Miss., till 1838. He was representative in congress 1839-57; sec. of the interior 1857-1861, Jan. 8, when he resigned on the issuance of the order to reinforce the garrison of Fort Sumter. He was govt. of Miss. 1862-64. In 1864 he was Confederate commissioner in Canada, and promoted plans for the capture of Camp Douglass, near Chicago, and release of the prisoners of war there confined. The charge was made also that T. instigated plots to fire northern cities, and even to introduce yellow fever by means of infected clothing; but no serious proof of these allegations was offered.

THOMPSON, JOSEPH PARRISH, D.D., LL.D.: Congregational minister and author: 1819, Aug. 7—1879, Sep. 20; b. Philadelphia, Penn. He graduated at Yale 1838, and afterward from the Yale Divinity School; was pastor of the Chapel St. Congl. Church, New Haven, 1840-45, and a founder of the *New Englander* review; and was pastor of the Broadway Tabernacle, New York, 1845-71. He was distinguished as a preacher of learning and force, an active promoter of his denomination in the metropolitan district and elsewhere (one of the organizers of the first Congl. convention, at Albany 1852), a prolific writer for the press, and a founder of the *N. Y. Independent*; also as a specialist in Egyptology. In reforms, especially anti-slavery, he was prominent. In 1852-3 he visited the Orient. He lectured on Egyptology at Andover 1871. Having resigned his charge in New York, he removed to Berlin, Germany, 1872, and resided there until his death, engaged in his favorite studies, and meanwhile doing much to diffuse information in regard to his native country. In 1875 he received the thanks of the German govt. for explaining its position toward Ultramontaniam, in addresses made while on a visit to England. His scholarly attainments were honored by foreign learned societies, of which he was an active member. He published: *Memoir of Timothy Dwight* (1844); *Lectures to Young Men* (1846); *Hints to Employers* (1847); *Memoir of David Hale* (1850); *Stray Meditations* (1852), republished as *The Believer's Refuge*; *The Invaluable Possession* (1856); *Egypt, Past and Present* (1856); *The Murky Witnesses* (1857); *Memoir of Rev. David T. Stoddard*

(1858); *The Christian Graces* (1859); *The College as a Religious Institution* (1859); *Love and Penalty* (1860); *Bryant Gray* (1863); *The Holy Comforter* (1866); *Man in Genesis and Geology* (1869); *Theology of Christ, in His Own Words* (1870); *Home Worship* (a manual, 1871); *Church and State in the United States* (1874); *Jesus of Nazareth—His Life for the Young* (1875); *The United States as a Nation* (1877); *The Workman: His False Friends and His True Friends* (1879).

THOMPSON, LAUNT: sculptor: 1833, Feb. 8—1894 Sept. 26: b. in Ireland. In Albany, N. Y., he began the study of medicine, but became pupil and asst. of the sculptor E. D. Palmer for 9 years, producing portrait and ideal heads of merit. Removing to New York 1858, he was busily employed on orders for medallion portraiture; exhibited a remarkable group in the round, entitled *The Trappers*; was elected academician 1862, and vice-pres. of the National Acad. 1874. He has twice resided in Italy. Besides ideal works, he has produced statues of noted men at Yale, West Point, etc.; an equestrian statue of Gen. Burnside in Providence, R. I.; a bust of Bryant in the Metropolitan Museum, New York; and other works no less deserving.

THOMPSON, MAURICE: essayist and poet: b. Fairfield, Ind., 1844. In childhood he was taken by his parents to Georgia, and there he was educated. In manhood he returned to Indiana, and resides in that state, though he passes the winters in the south. He is a lawyer by profession, but his predilection is for study of nature, and he loves an outdoor life. He was (1888) chief of the dept. of geology and nat. history of Indiana. His poems are the direct expression of the sights and sounds of nature, interpreted by a mind full of sympathy. But he is also a student of books and a master of style. His distinguishing qualities are well summed up in the following judgment of a competent critic: 'He is a true artist in word-painting, and yet . . . he does not depend as much upon phrasing as do most modern stylists.' The critic then mentions 'the strain of ripe and rich scholarship,' and 'the flashes of rare insight into the most fascinating qualities of nature.' Of volumes published by T. the following may be named as characteristic: *By-ways and Bird Notes*; *Sylvan Secrets*; *Songs of Fair Weather*.

THOMPSON, WILLIAM: soldier: about 1725–1781, Sep. 4; b. Ireland. He was a citizen of Penn., and commanded the first battalion of troops raised in response to the demand of the continental congress after the fight at Lexington. His 8 companies reached the camp at Cambridge, Mass., 1775, Aug. 14, and Nov. 10 repelled a British landing party at Lochmere Point. Commissioned brig.-gen. 1776, he relieved Gen. Charles Lee of the command at New York, and was ordered to Canada with 10 regts. to reinforce Gen. John Thomas. He joined the northern army on its retreat from Quebec, and took the chief command, *vice* Thomas, invalided. Gen. Sullivan assumed the chief command shortly afterward, and in the fight at Trois Rivières T. was taken prisoner: he was held two years.

THOMPSONVILLE: town in Hartford co., Conn., on the Connecticut river, and on the New York New Haven and Hartford railroad; 8 m. s. of Springfield, 17 m. n. by c. of Hartford. It has 1 private bank, 1 trust company, and 1 weekly newspaper; and is noted for its manufactures of carpets.—Pop. (1830) about 2,000; (1890) 5,593.

THOMSON, CHARLES, LL.D.: patriot and scholar: 1729 Nov. 29—1824, Aug. 16; b. Ireland. He came to America with his parents 1740; was educated in Dr. Allison's seminary, New London, Penn.; was the friend of Benjamin Franklin, and was known by white men and Indians as a man of incorruptible integrity. He was an enthusiastic patriot, and traveled throughout the country preparing the farmers for the struggle with England. He was unanimously chosen clerk of the 1st continental congress. He published a translation of the Septuagint and New Test. 1808, and a *Synopsis of the Four Evangelists* 1815.

THOMSON, Sir CHARLES WYVILLE, LL.D., F.R.S.: naturalist: 1830, Mar. 5—1882, Mar. 10; b. Bonyde, Scotland. He was educated in the Univ. of Edinburgh; became lecturer on botany in the Univ. of Aberdeen 1850, prof. nat. hist. in Queen's Coll., Cork, 1853; but was transferred to Queen's Coll., Belfast, 1854. He had his first experiences in sea-bottom dredging 1868-9; and became Regius prof. of nat. history in Edinburgh Univ. 1870. He sailed in the great *Challenger* expedition as head of the scientific dept., 1872, Dec. 7; returning 1876, May 27, after a cruise of about 68,000 m. He told the story of his early dredging expeditions in *Depths of the Sea* (1872); his later observations are given in *The Voyage of the Challenger*.

THOMSON, JAMES: author of *The Seasons*: 1700, Sep. 11—1748, Aug.; b. Ednam, in Roxburghshire, of which parish his father was minister. He was put to school at Jedburgh, and passed to the Univ. of Edinburgh. His intention was to enter the ministry, and he took a full course of study with that view; but from a very early age he had had a liking for verse, and 1725 he went to London, to seek fame and fortune as a poet. Soon he drifted to the neighborhood of Barnet; and there, with few friends, without employment and without money, and saddened by his mother's death, he produced his first poem, *Winter*—congenial to his cheerless state of mind. This, with some delay and difficulty, he disposed of to a publisher 1726 for three guineas; and as its success was not instant, his outlook was not hopeful. Gradually, however, the merits of the poem were recognized; successive editions were soon called for; friends and patrons were not lacking to the young author; and in no long time T. found himself a poet of high repute. The *Winter* was followed 1727 by the poem *Summer*; *Spring* was pub. 1728; and *Autumn*, completing *The Seasons*, 1730, with reissue of the previous portions. In 1729 T. produced the tragedy *Sophonisba*; but though great expectations were formed of it, its success on the stage was small. 1730-33 T. was in Paris and elsewhere with the son of Sir Charles Talbot, the chancellor;

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and on his return, at the death of his pupil, the comfortable place was bestowed on him of sec. of the briefs. This he held til it lapsed, on the death of the chancellor 1737, which left him again in straits, which were alleviated by a pension of £100 a year by the Prince of Wales. His tragedy of *Agamemnon*, 1738, had no success; and his poem on *Liberty*, by himself considered his greatest work, found small favor with the public. His *Tancred and Sigismunda*, 1745, was more successful. About this time, the accession to power of his friend Lyttleton secured him the office of surveyor-gen. of the Leeward Islands, which, however, he did not long live to enjoy. He was buried in the church at Richmond, and a monument was afterward erected to his memory in Westminster Abbey. In the spring before his death he published his most finished and elaborate poem, *The Castle of Indolence*, written in the Spenserian stanza, with all the descriptive power and opulence of imagination, and manifestation of his own generous and noble personal qualities, which distinguished his more popular *Seasons*. Together, they maintain for T. a high place in the roll of British poets. His other works, except the song *Rule Britannia*, are now forgotten. *Winter* ranks as his best work, produced in the freshness of his powers, with less elaborate attempt at classical finish than in his later productions. T. was the most popular poet in the English language, previous to Scott and Byron. As a man, he was singularly amiable; and his careless generosity of disposition seems to have endeared him to all who knew him.

THOM'SON, JAMES BATES, LL.D.: educator: 1808, May 21—1883, June 22; b. Springfield, Vt. He gained an education by attending a district school in winter, for he had to labor on his father's farm in the summer. He became a schoolmaster 1824; graduated at Yale Coll. 1834; was principal of the Nantucket, Mass., acad. 1835-42. Settling in Auburn, N. Y., 1843, he was organizer of teachers' institutes throughout N. Y. for many years. He prepared an abridgment of Day's *Algebra* (1843), for the use of schools, and was author of a series of text-books of arithmetic which for some time had a total sale of 100,000 copies a year.

THOM'SON, MORTIMER (pen-name 'Q. K. Philander Doesticks, P.B.'): humorist: 1832, Sep. 2—1875, June 25; b. Riga, N. Y. He was for a short time a student in the Univ. of Mich., then went on the stage; subsequently was a travelling salesman, and then engaged in writing for newspapers. He came into public notice through his rhymed police-court reports and some sketches of fortune-tellers in New York; and his report of a sale of slaves in S. C. won for him a national reputation. T. was for many years a lyceum lecturer, delighting audiences throughout the United States with his humorous and sarcastic comments on men and affairs, especially with his rhymed lecture on 'Pluck.' He was author of several volumes.

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THOMSON, WILLIAM, D.D.: archbishop of York: 1819, Feb. 11—1890, Dec.; b. Whitehaven, England. He graduated bachelor of arts at Oxford 1840, and was tutor, dean, etc., of his coll., Queen's. After several curacies and a rectorship of All Souls, Marylebone, he was made bp. of Gloucester and Bristol 1861, and transferred to York as abp. and primate 1863. He was select preacher of Oxford Univ. 1848-56, preacher at Lincoln's Inn 1858-61, and chaplain to the queen 1860-1. His position on such debated questions as univ. reform, the burial bill, ecclesiastical matters, and temperance reform, was progressive. He published: *An Outline of Necessary Laws of Thought* (1848); *The Atoning Work of Christ*, Bampton lectures (1853); *Sermons at Lincoln's Inn Chapel* (1861); *Life in the Light of God's Word* (1868); *The Limits of Philosophical Enquiry* (1868); *Word, Work, and Will* (1879); and edited *Aids to Faith*, and contributed to *Smith's Bible Dict.* and to other works.

THOMSON, Sir WILLIAM, LL.D., D.C.L.: mathematician and natural philosopher of very high distinction: b. Belfast, Ireland, 1824, June. His father was prof. of mathematics in the Univ. of Glasgow. T. graduated 1845, as second wrangler and first Smith's prizeman, at Cambridge, where he was soon afterward elected to a fellowship in St. Peter's College; and he became prof. of nat. philos. in the Univ. of Glasgow 1846, which post he still holds. While still an undergraduate, he published several valuable papers. He was for some time ed. of the *Cambridge and Dublin Mathematical Journal*, and some of his most brilliant discoveries have appeared in its pages. He has contributed also to *Comptes Rendus*, to the Transactions and Proceedings of the Royal Societies of London and Edinburgh, and to many other journals. All his numerous writings have a stamp of originality. In the mathematical theories of Elasticity, Vortex-motion, Heat, Electricity, and Magnetism, he has made remarkable discoveries—e.g., the Dissipation of Energy, the beautiful idea of Electric Images, and the complete solution of the problem of telegraphing through a submarine cable. Popularly he is best known by his association with submarine telegraphy, which owes to his investigations and inventions much of its successful development. On the successful completion of the Atlantic telegraph 1866, he was knighted. He has invented very many instruments of high importance for various electrical purposes—e.g., electrometers and galvanometers, instruments for determination of electric units in absolute measure, etc. Electric lighting owes much to his inventions; indeed his important scientific applications in various departments are almost beyond numbering. He is a remarkable instance of the combination of mathematical instinct with the very highest powers of reasoning and with the practical skill of the mechanic and engineer. In conjunction with Prof. Tait, he began 1867 the publication of an extensive *Treatise on Natural Philosophy*; and his *Papers on Electrostatics and Magnetism* (a splendid monument of his genius)

were collected and reprinted 1872. His *Mathematical and Physical Papers*, collected from scientific periodicals, were pub. in 3 vols., 1882, 84, 90 (Cambridge). He holds positions of high honor in a great number of Brit. and other scientific bodies; and 1890 became pres. of the Royal Soc. In 1892 he was raised to the peerage as Lord Kelvin.

His elder brother, JAMES T., prof. of civil engineering in Glasgow, has made improvements in the construction of turbines and other engines (see WATER-POWER); but is best known by his splendid discovery that the freezing-point of water is lowered by pressure, and by his glacier-theory founded on it: see HEAT. ICE. REGELATION.

THOMSON, WILLIAM MCCLURE, D.D.: missionary and author: b. Spring Dale, O., 1806, Dec. 31. He graduated at Miami Univ. 1826; studied theol. at Princeton; and was missionary of the Amer. and Presb. boards in the Orient—in Jerusalem 1832-3, and Beirut 1833-76; and then returned to this country. He published an original and very helpful work, illustrating Bible scenes and manners, *The Land and the Book* (1859); also two similar works, *The Land of Promise* (1855), and *Lebanon, Damascus, and Beyond Jordan* (1886).

THOMSONIANISM, in Medicine: a materia medica and therapeutic originated by Dr. Samuel Thomson (d. Boston, Mass., 1843). His doctrine has for one of its ground-principles the ancient hypothesis that the human body is composed of the 'four elements,' earth, fire, water, air. His materia medica was purely botanic, all vegetable products having the tendency to spring up from the earth, and *therefore* to withhold man from the grave; while all minerals and metals have their natural place in the depths of the earth, and *therefore* tend to carry down into the earth those who use them: see his *Life and Medical Discoveries* (Boston 1832).

THOMSONITE, n. *tŏm'sŏn-īt* [after Dr. Thomson, a Glasgow professor of chemistry]: a mineral of the zeolite family, of a whitish color, occurring in rectangular prisms in cavities in amygdaloid, basalt, greenstone, and old lava.

THONG, n. *thŏng* [AS. *thung*, a strap: Icel. *thvengr*, a latchet]: a thin leather strap or leather string, used for fastening anything; the striking part of a whip.

THOR, n. *thŏr* [Icel. *Thorr*; AS. *Thunor*: the same word as *thunder*]: in *Scand. myth.*, son of Odin, the supreme god, and of Yörd (Earth); the god of thunder, winds, showers, and the weather, after whom is named the fifth day of the week, *Thursday*. His palace, supported on 540 pillars, was called Thrudwanger; here he received the warriors that had fallen in battle. Thunder was caused by the rolling of his chariot, drawn by he-goats. He was in the vigor of youth, had a red beard, and was the strongest of all gods and men; the gods even called in his assistance when they were in straits. He was, in particular, a terror to the Giants (q. v.), with whom he was perpetually at strife, and whom he struck down with his hammer Mjolnir (i. e., the smasher or mauler), which had the prop-

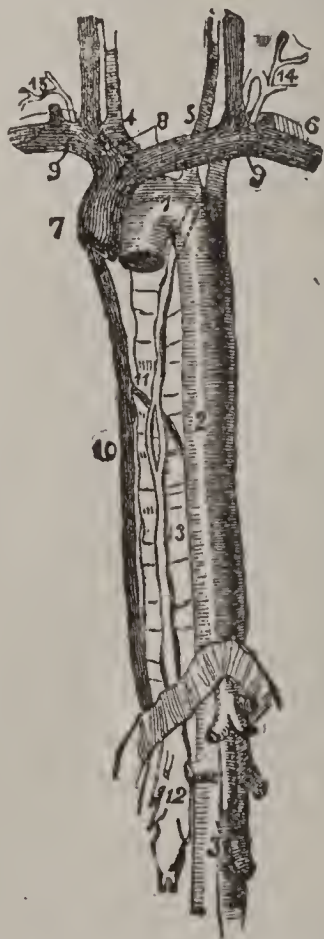
THORACIC DUCT.

erty of returning to his hand after being hurled; it had been made by cunning dwarfs. The sign of the hammer was among the heathen Teutons analogous to that of the cross among Christians. In the contest at the twilight of the gods, T. slew the serpent of Midgard, but fell at the same time poisoned by the venom exhaled from its mouth.—The name of T. was widespread. The Saxons worshipped him as Thunar (High German, *Donar*). Torden, the wrathful deity dreaded by the Lapps, who in his rage hurled down huge blocks from rocks, tore up trees, destroyed cattle and men, is evidently the Scandinavian Thor. The Gallic god Taranis—in an old inscription Tanarus—mentioned by Luean, also appears identical, especially as *torrunn* in the Celtic languages still signifies thunder. The attribute of thunder is intimately associated with the Latin Jupiter and the Greek Zeus (see these titles: also INDRA). Of all the Asa-gods, T. had unquestionably the most worshippers. In Upsala, according to Adam of Bremen, he occupied the place of honor in the temple between Odin and Frikke. In Norway, T. was the national god, and here, as in Iceland, temples were almost exclusively erected to him. Offerings were made to him, particularly in times of pestilence. On the ground of the superior respect given to T., and of his being called ‘Old Thor,’ some place him in opposition to Odin, and consider him historically as an older divinity, only partly supplanted by the Odin doctrine. As rude force is the predominating element in T., the humorous element in the Scandinavian belief attaches to him. Thus, the giants often blinded him by magic, and made fun of him; yet he always shows his extraordinary strength in these cases, and in the long run his opponents are invariably overcome by his hammer. The name Thor survives in numerous names of places (Thuneresberg, in Westphalia; Thunderhill, in Surrey; Thurso), also in personal names (Thorburn, in Scand. Thorbiörn).—See SCANDINAVIAN MYTHOLOGY.—Compare Uhland, *Der Mythos von Thor* (Stutt. 1836); Grimm, *Deutsche Mythologie*.

THORACIC DUCT: canal equal in diameter to a goose-quill, proceeding from the *Receptaculum Chyli* (into which the contents of the lacteals are collected, and which is in the front of the body of the second lumbar vertebra): it ascends along the front of the vertebral column, between the aorta and ascending vena cava, as high as the fourth dorsal vertebra; it then inclines to the left, and, passing behind the arch of the aorta, ascends as high as the seventh cervical vertebra, when it bends forward and downward, and terminates at the point of union of the subclavian and internal jugular veins of the left side, where it is provided with a pair of semilunar valves, which prevent the admission of venous blood into it. It is provided with other valves on its upward course. This duct is not liable to any special diseases; but if its function of conveying chyle from its source into the general circulation be interfered with—e.g., by the pressure of a tumor—the due nutrition of the system is checked.

THORAX—THORBURN.

THORAX, n. *thō'rāks* [L. *thorax* or *thorācem*, the breast, defensive armor for the breast: Gr. *thōrax*, the breast, a breastplate]: in *anat.*, the chest; the part of the body between the neck and the abdomen, containing the heart, lungs, etc. (see **CHEST**). **THORACIC**, a. *thō-rās'ik*, of or pertaining to the thorax. **THORACIC DUCT**, the great trunk which conveys the contents of the lacteals into the blood (see above). **THORAC'ICS**, n. plu. *-īks*, order of bony fishes having the ventral fins placed beneath the pectorals.



The Course and Termination of the Thoracic Duct:

1, the arch of the aorta; 2, the thoracic aorta; 3, the abdominal aorta; 4, arteria innominata; 5, the left carotid; 6, the left subclavian; 7, the superior vena cava, formed by the union of 8, the two venæ innominatæ; and these by the junction, 9, of the internal jugular and subclavian vein at each side; 10, the vena azygos; 12, the receptaculum chyli; 13, the thoracic duct, often dividing in the middle of the thorax into two branches, which soon reunite (the course of the duct behind the great vessels is shown by a dotted line); 14, the duct making its turn downward before terminating in the veins of the left side; 15, the termination of the trunk of the duct on the right side.—From Wilson's *Anatomist's Vade-mecum*.

THORBURN, *thor'bérn*, GRANT: merchant: 1773, Feb. 18—1863, Jan. 21; b. near Edinburgh. Emigrating to America 1794, he was successively nail-maker and grocer in New York; and then seed-merchant, first in Newark, N. J., then in New York. He retired from business 1854. He contributed many articles to magazines and newspapers, under the name Lawrie Todd. He also published many books, among them: *Forty Years' Residence in America*; *Men and Manners in Great Britain*; *Lawrie Todd's Hints to Merchants, Married Men, and Bachelors*.

THOREAU—THORN.

THOREAU, *thō'rō*, HENRY DAVID: author: 1817, July 12—1862, May 6; b. Middleboro, Mass. He graduated at Harvard 1837, and thereafter led a life mostly of eccentric solitude, writing for leading magazines, lecturing occasionally, engaged somewhat in civil engineering and handicrafts, intimate with a few exceptional men like Emerson and Alcott, and giving much time to communion with wild nature, of which he was a poetic student and an original interpreter, of the type of John Burroughs and a few others. To children and his own kin and intimates he was genial, but in general he cultivated stoicism. He was an extreme individualist, and even refused to recognize the right of society to tax him, for which, but more in resentment toward his ways and sentiments generally, he was for a while imprisoned. To carry out his amateur return to man's primitive condition, he built a hut in Concord, Mass., which, without lock, he regarded as no more his own than any natural retreat, but free to any finder. In philosophy he was a transcendentalist and a 'defiant pantheist.' His seclusion was more from nature-worship than a positively misanthropic temper, and his egoism verged naturally toward egotism. As a poet he was highly imaginative; as a scholar, a good Grecian; as a phenomenon, a wild olive-tree of New England independence and erraticism. In his lifetime he published *A Week on the Concord and Merrimac Rivers* (1849); and *Walden, or Life in the Woods* (1854). Afterward appeared *Excursions in Field and Forest* (1863); *The Maine Woods* (1864); *Cape Cod* (1865); *Letters to Various Persons*, with poems (1865); *A Yankee in Canada*, with reform papers (1866). See Sanborn's life of T. in *Amer. Men of Letters*.

THORITE, n. *thō'rīt* [after the Scand. deity *Thor*]: a hard, brittle, massive black mineral, occurring in the syenites of Norway. THORIA, n. *thō'rī-ă*, or THORINA, n. *thō-rī'nă*, one of the primitive earths obtained from the mineral thorite; oxide of thorium. THORIUM, n. *thō'rī-ŭm*, or THORI'NUM, n. *-rī'nŭm* (symb. Th; at. wt. 234): very rare metal of the Tin group, white and very heavy, its sp. gravity being 9.402. Thorium was discovered 1828 by Berzelius in thorite, a mineral from the Norwegian island Lovön, in which it exists as a silicate: it has since been found in other rare minerals. It is not oxidized by water; dissolves easily in nitric, slowly in hydrochloric acid; and is not attacked by caustic alkalis. These compounds of T. have been obtained: Thorium oxide, ThO₂; T. chloride, ThCl₄; T. sulphate, Th(SO₄). T. and its compounds have no practical importance.

THORN, n. *thawrn* [Icel. *thorn*; Goth. *thaurnus*; Ger. *dorn*; Dut. *doorn*; Dan. *tjörn*, a thorn]: any tree or shrub armed with sharp spines—specifically a hardy tree or shrub of the ord. *Rosacææ*, a common species in Britain being *Cratægus ox'yacanth* or hawthorn (see CRATÆGUS: HAWTHORN); a Spine (q.v.); a prickly; anything that causes great trouble and anxiety; trouble; care; vexation. THORN'Y, a. *-ī*, full of thorns, or rough with them; spiny; troublesome and harassing. THORN'LESS, a. *-lēś*, wanting

THORN—THORN-APPLE.

thorns. **THORN-BUSH**, the hawthorn or other prickly shrub. **THORN-HEDGE**, a hedge or fence composed of thorn-bushes, particularly the hawthorn or *Crataegus oxyacantha*. **THORN'BUT**, -büt [Ger. *dornbutte*]: a turbot.

THORN, *torn* (Pol. *Torún*): strongly fortified town of Prussia, in the s. of the province of W. Prussia, on the right bank of the Vistula, 31 m. e.s.e. of Bromberg by railway. The town was founded 1232, was a member of the Hanseatic League, and contains many houses—e.g., the town-hall—remarkable for their beautiful gables and interiors. It is the birthplace of Copernicus, whose monument is in the *Johannis-Kirche*. It became a Polish town 1454. It came to Prussia after the second partition of Poland; was for a time under French authority; but became finally a part of the Prussian monarchy at the Congress of Vienna 1814. It became an important fortified stronghold in the 17th c., and has repeatedly been besieged. Since 1878 it has been made a fortress of the first rank by Prussia, the old fortifications being removed, and a series of detached forts built. There is active trade in corn and timber. Pop. (1880) 20,617, of whom two-fifths are German Protestants the remainder mainly Rom. Cath. Poles, with about 1,200 Jews; (1890) 27,007.

THE CONFERENCE OF THORN was an effort to explain away the differences between the Christian churches, with a view to religious reunion; and was originated by the king of Poland, Ladislas IV. Letters were addressed to all the religious bodies in Poland, inviting them to send delegates to an assembly at T., for mutual explanation of their doctrines, with a view to the removal of all differences of belief. The conference met 1645, Oct., and was opened in a spirit of moderation; but it soon lapsed into disputation and controversy, and broke up without any result 1645, Nov. 21.

THORN'-APPLE: plant of nat. order *Solanaceæ*, having a tubular 5-toothed calyx, a large funnel-shaped 5-lobed flower, a 2-laminated stigma, and an imperfectly 4-celled, prickly, or unarmed capsule. The species are in general very narcotic, and productive of excitement or delirium, and though eaten by goats, may be fatally poisonous, as when the fruit is eaten by children. The common T.-A., or **STRAMONIUM**, is known, in the far w. especially, as James-town or jimsen weed, and is common in waste places around towns. There are two species in N. Amer. (formerly regarded as one): *D. tatula*, the Purple S., referring to color of stem and flower, and supposed to be from tropical Amer.; and *D. stramonium*, with white flowers. It is an annual, with smooth stem and leaves and erect prickly capsules; native of the E. Indies; said to have been brought by the gypsies to Europe, where it is now abundant, as also in Asia, n. Africa, and N. America. It is by some stated to be the plant from which the poisonous 'dri' of the gypsies is obtained. It contains a peculiar narcotic alkaloid, *daturine*, which is one of the most powerful narcotic acrid poisons; but its leaves and seeds are used, though rarely, in medicine. The leaves have an extremely nauseous over-

THORN-APPLE.

powering smell and a loathsome bitter taste; the seeds, of dark-brown color, are still more poisonous. The leaves contain .02 per cent. of the alkaloid. They are eaten by caterpillars; but a decoction produced convulsions in a rat, and drowsiness and even death in a horse. Average doses of 2 grains of the powdered leaves, or 1 grain of the root, repeated at intervals of several hours, are used to dilate the pupil of the human eye, or to strengthen the pulse and give warmth and moisture to the skin. Twice those amounts produce dizziness, nausea, feverishness, confusion of vision, and often an eruption like scarlatina. In fatal amounts, stupor combined with insomnia precedes death. The leaves, with great caution, have been smoked for spasmodic asthma; but this is inadvisable where there is pulmonary or cardiac weakness. The bruised leaves are an anodyne, externally applied, for rheumatism and neuralgia; but when these ills are deep-seated, the internal use of belladonna is more effectual. As an old remedy for insanity and epilepsy, it is obsolete, though benefit has been recorded in some isolated cases. It has been used also for whooping-cough, and dysuria, etc.—The alkaloid daturine (= daturia) has been regarded as identical with the atropine (see ATROPIA) from the plant *Atropa belladonna*; but Ladenburg, 1880, regards daturine as a mixture of atropine with much hyoscamine (alkaloid found in henbane, *Hyoscyamus niger*), while Ernst Schmidt, 1881, says the atropine predominates. Both substances have the same chemical formula, $C_{17}H_{23}NO_3$. Daturine, or stramonin, is a white tasteless powder, soluble in oils and ether, sparingly in alcohol. Atropine is more powerful in its effects than daturine, is soluble in alcohol, and its salts are insoluble in ether. The atropine sulphate, used in medicine, is most poisonous to carnivora, dogs somewhat excepted. A hypodermic $\frac{1}{20}$ of a grain raised the human pulse to 110; a 2-grain dose killed a man, and another man died from ointment of atropine on denuded skin. Infants are proportionately less affected, one recovering from a $\frac{3}{4}$ -grain dose. Both daturine and atropine, in otherwise fatal amounts, are antidotes to poisoning by opium or its alkaloid morphia; and conversely these are used as antidotes to the former.

Still more narcotic is the Soft-haired Thorn-apple (*D. metel*), native of s. Asia and Africa. Robbers in India use it to stupefy those whom they would rob, or rather to throw them into the condition of a waking dream. From its seeds, with opium, hemp, and certain spices, a strong intoxicating substance is prepared, which the Mohammedans of India use to produce in themselves an indescribable pleasurable feeling for a short time; but this indulgence destroys the constitution. *D. sanguinea*, the FLORIPONDIO of Peru, is used by the Indians to prepare a very powerful narcotic drink, which stupefies when very diluted, and when strong brings on maniacal excitement.—The beautiful *D. fastuosa* has flowers externally of violet color and white within, and is cultivated as an ornamental plant, especially a variety with what are called double flowers, but

THORNBAC*—THORNTON†.

which consist rather of two corollas, one within the other.—*D. arborea*, now known as *Brugmansia*, native of Peru and Colombia, is also cultivated: it has very splendid pendulous white flowers, 9-12 inches long, which diffuse a sweet odor in the evening and at night.

THORNBAC (*Raia clavata*): species of ray or skate, common on most parts of the British coast. It attains large size; the muzzle is little produced, and the form is nearly rhombic; the tail has two small membranous fins near the tip, on the upper central ridge, and a small dilatation at the tip. The upper surface is brown, with lighter spots; the under surface white. The upper surface is rough, with small points, and has numerous nail-like crooked spines, each with an oval bony base. This fish is esteemed for food, particularly in autumn and winter, but is most abundantly captured in spring and summer, when it approaches the shore to deposit its eggs.—The name T. is given also to a Brit. spider-crab (*Maia squinado*).

THORNDIKE, *thorn'dik*, GEORGE QUINCY: artist painter: about 1825-1886, Dec.; b. Boston. Having graduated at Harvard Coll. 1847, he studied painting in Paris, and on his return settled in Newport, R. I. He was strongly influenced by the 'French manner.' Of his works the best known are: *The Wayside Inn*; *Swans in Central Park*; *The Lily Pond*.

THORNDIKE, ISRAEL: merchant: 1757-1832, May 10; b. Beverly, Mass. He was appointed by the govt. of Mass. capt. of a privateer 1776, and took many prizes during the revolution. After the peace, T. engaged in the E. India and China trade and in manufacture, acquiring a large fortune. He was repeatedly member of the Mass. legislature. He purchased and presented to Harvard Coll. (1818) a very valuable library of 4,000 vols., largely of *Americana*.

THORNTON, Sir EDWARD, Q.C.B., D.C.L., LL.D.: born England, 1819. He entered the Brit. diplomatic service 1842 as attaché at Turin; was attaché at Mexico 1845, sec. of legation there 1851; sec. to the special envoy to the river Platte 1852; chargé d'affaires and consul-gen. to New Granada 1854, but was transferred in the same year to Uruguay; minister plenipotentiary to the Argentine Confederation 1859; special envoy and then minister plenipotentiary to Brazil 1865; transferred in the same capacity to Portugal 1867; but before assuming the duties of that post, T. was sent to Washington as Brit. minister. He became ambassador to St. Petersburg 1881, and to Constantinople 1884, but was succeeded there by Sir William White 1886. He visited the United States 1887 as commissioner of foreign holders of bonds of the state of Va.

THORNTON—THORNYCROFT.

THORNTON, JOHN WINGATE: historian: 1818, Aug. 12—1878, June 6; b. Saco, Me. He graduated at the Harvard Law-School 1840; was one of the founders of the New England Historic-Genealogical Soc., and vice-pres. of the Prince Publication Soc. and the American Statistical Assoc.; and contributor on antiquarian subjects to different periodicals. Among his works were the following volumes: *The Landing at Cape Anne*; *Ancient Pemaquid*; and *Pulpit of the American Revolution*. He died at Saco.

THORNTON, MATTHEW: physician and patriot: 1714—1803, June 24; b. Ireland. He was brought to this country by his father 1717. He received a classical education at Worcester, Mass., and studied medicine; 1745, as surgeon, accompanied Pepperell's expedition against Louisburg; afterward settled at Londonderry, N. H., and practiced medicine; was made pres. of the provincial governing convention of N. H. 1775; was a delegate to the continental congress 1776, and signed the Declaration of Independence; subsequently became chief-justice of Hillsborough co., N. H., and afterward judge of the supreme court. He died at Newburyport, Mass.

THORNWELL, *thorn'wēl*, JAMES HENLEY, D.D., LL.D.: Presbyterian clergyman and educator: 1812—1862, Aug. 1; b. in Marlborough district, S. C. After graduation at the S. C. Coll. 1829, and studying law, he turned to theol.; preached at Waxhaw, and 1836 became prof. of logic and belles-lettres in S. C. Coll.; in 1842 prof. of the evidences of Christianity, and in 1852 president. Four years later he resigned for a professorship in the Presb. theol. seminary at Columbia, which he retained until the year of his death. His philosophical and logical mind, literary finish, and ability in speech, together with his zeal for high orthodoxy and for southern institutions and claims, rendered him very prominent. Besides pamphlets, he published *Arguments of Romanists Discussed and Refuted* (1845); *Discourses on Truth* (1854); *Rights and Duties of Masters* (1861); *The State of the Country* (1861). A collection of his works by Rev. John B. Adger was issued in 2 vols. 1874. He died in Charlotte, N. C.

THORNYCROFT, *thorn'ī-kroft*, MARY (FRANCIS): English sculptress: about 1814—1895, Feb. 1. b. Thornham, dau. of John Francis, sculptor. In her early youth her work found place in the Royal Acad. exhibition. Among her first original pieces was a *Penelope*; *Ulysses and His Dog*; and an admirable *Flower Girl*. She was married 1840 to one of her father's pupils, T. Thornycroft, and soon afterward spent some time in Rome, modelling a *Sappho* and other designs. In 1843 Queen Victoria commissioned her to make statue portraits of the Princess Alice, the Princess Royal, the Prince of Wales, and Prince Alfred, the four in the character of the seasons. Her later work was in the same line, for the most part, including persons of rank or otherwise distinguished,

THOROLD—THORPE.

THOROLD, *thōr'old*, ANTHONY WILSON, D.D.: Anglican bishop: b. Hougham, Eng., 1825, June 13. He was educated at Oxford. Having received priestly orders, he was successively rector of several parishes in London; canon of York 1874; bp. of Rochester 1877; and was transferred to the see of Winchester 1891. He has written many devotional works, of which one, *The Presence of Christ*, has passed through 20 editions. D. 1895, July 2.

THOROUGH, a. *thūr'ō*. [AS. *thurh*; OHG. *durh*, thorough: another form of **THROUGH**, which see]: *literally*, passing through or to the end—hence, complete in every respect; perfect; entire: **PREP.** in *OE.*, through: **N.** in *Eng. hist.*, the name given by Wentworth, Earl of Strafford, in his correspondence, to the policy which he meditated of rendering Charles I. an absolute monarch; in *prov. Eng.*, a furrow between two ridges. **THOR'OUGHLY**, ad. *-lī*, fully; completely. **THOR'OUGHNESS**, n. *-nēs*, the state or quality of being thorough. **THOROUGH-BRED**, a. bred from a sire and a dam of the best blood, as a horse; fully taught or accomplished. **THOROUGH-BASS**, or **-BASE**, *-bās*, in *music*, an accompaniment to a continued bass by figures; a term commonly used as synonymous with the science of harmony (see **FIGURED BASS**, under **FIGURE**). **THOR'OUGHFARE**, n. *-fār*, a passage from one street or opening to another; an unobstructed way; power of passing. **THOROUGH-GOING**, a. going all lengths; thorough; complete; out-and-out. **THOROUGH-PACED**, a. well-trained, as a horse; complete; going all lengths; out-and-out; consummate, as a *thorough-paced* scoundrel. **THOROUGH-PIN**, a tumor on each side of the hock of a horse.

THOR'OUGHWORT: see **EUPATORIUM**.

THORP, or **THORPE**, n. *thōrp* [AS. *thorp*]: in *OE.*, a hamlet; a common element of place names, as *Milnthorpe*.

THORPE, THOMAS BANGS: author and artist painter: 1815, Mar. 1—1878, Oct.; b. Westfield, Mass. Having studied 3 years in Wesleyan Univ., he made a tour of the south, and settled in La. His first venture in authorship was *Tom Owen the Bee-hunter*, which won for him high rank among humorists. This was followed by *The Big Bear of Arkansas*, equally successful. He became editor of the *New York Spirit of the Times* 1859. He was author of several volumes. Many of his paintings possess high merit.

THORVALDSEN—THOSE.

THORVALDSEN, *tor'vål-zèn*, BERTEL: one of the greatest of modern sculptors: 1770, Nov. 19—1844, Mar. 24, b. Copenhagen, Denmark. The date and place of his birth (as above) are not absolutely certain; and he himself, when casually questioned as to the day, replied with *brusque* felicity: 'I don't know; but I arrived at Rome on the 8th March, 1797;' dating his birth, as it were, from the commencement of his career as an artist. He was the son of a poor ship-carpenter from Iceland, who had settled in Copenhagen; and his first essays in art were the carving of figure-heads in the yard where his father worked. His education was otherwise neglected, so that through life he could but indifferently write or spell; but the genius for art was born with him, and 1793 he gained the first gold medal for design at the Acad. of Copenhagen; and with it the privilege of three years' residence abroad for study. Accordingly, 1796, he sailed for Rome. After obscure and patient labor, he at length drew admiration by the model for his great work *Jason*. No purchaser, however, appeared for it till 1803, when the nearly discouraged sculptor received an order for its production in marble at a munificent price. From this time prosperity and fame flowed upon him. In 1819 he returned to Denmark for a year: his reception in Copenhagen was triumphal, and apartments were assigned him in the palace of Charlottenburg. He was again in his native land 1838–41. In 1844, revisiting Copenhagen, he died suddenly there in the theatre, of disease of the heart. All the works remaining in his possession he bequeathed to his country, to be preserved in a museum bearing his name, for whose maintenance he left also the bulk of his fortune, reserving a sufficient provision for Madame Poulsen, his natural daughter. This magnificent and unique collection is now one of the glories of the Danish metropolis. By his countrymen he is ranked as the greatest of sculptors since Michael Angelo: this verdict has been generally acquiesced in elsewhere; though the reaction in recent years against the classic style in sculpture, which mostly he imitated, has reduced his popularity. No catalogue of his chief works can here be given. He addicted himself by preference to classical and mythological subjects; but his great works in the cathedral of Copenhagen, *Christ and the Twelve Apostles*, *St. John preaching in the Wilderness*, and the *Procession to Golgotha*, have been much admired. Of his busts of eminent contemporaries, those of Byron and the great Danish poet Cehlenschläger are most notable.—The life of T. has been written by Hans Christian Andersen, by J. M. Thiele, and by Eugene Plon. English readers may consult a careful abridgment of Thiele's work by the Rev. M. R. Barnard (London 1865); and a translation of Plon's *Life* by Mrs. Cashel Hoey (1874).

THOSE, a. *thōz* [AS. *thás*]: the plu. of THAT (q.v.); *those* refers to the former, *these* to the latter.

THOTH—THOUGH.

THOTH, n. *thōth*: the anc. Egyptian god of eloquence, mythical inventor of writing and philosophy, and of music: the name means 'speech' or 'word'; the Egyptian Mercury or Hermes (q.v.: also EGYPT).



Thoth.—From a Bronze in the British Museum.

THOU, pron. *thow* [AS. and Icel. *thú*; Goth. *thu*; Dan., Sw., and Ger. *du*; L. *tu*; Gr. *su* or *tu*; Skr. *tvam*, thou]: nom. sing. of the second personal pronoun, formerly used in general address, but now seldom used, except in solemn discourse, in addressing the Deity, and by the Society of Friends or Quakers in their ordinary conversation, in *OE.*, *thou* was used in expressing affection toward intimate friends, contempt or reproach, and also good-humored familiarity between master and servant. THOU, v. to address as 'thou,' implying, scorn contempt, or the like.

THOU. *W.* JACQUES AUGUSTE, DE, or, as his name is frequently written, JACOBUS AUGUSTUS THUANUS: 1553, Oct. 8—1617, May 7; b. Paris; son of Christophe de T., first pres. of the *Parlément de Paris*. He was intended for the priesthood, and took minor orders; but soon renounced the clerical profession and turned to jurisprudence, diplomacy, and historical study—making his residence at Valence in Dauphiné, where he made the acquaintance of Scaliger, with whom he maintained friendship through life. In 1578 he accepted, with reluctance, the office of ecclesiastical councilor of the *Parlément de Paris*. A firm adherent of royalty, in 1588 he was made councilor of state to Henry III.; and became prominent in public affairs. On the accession of Henry IV., he was made keeper of the royal library. In 1593 he began his great work, *Historia sui Temporis*. He took an important part in the arrangement of the Edict of Nantes; but thenceforward seems to have had little connection with public affairs. From 1604, when the first 18 books of the history appeared, T. held the position of first historian of his age. Eighty books appeared during his life; and the remainder, in all 138 books, were pub. 1620.

As a historian, T. is eminently impartial; so devoid, indeed, of religious prejudice, that he incurred the imputation of a criminal Prot. sympathy; and 1609 his work was put into the *Index Expurgatorius*. It is written in severely classical Latin. The best Eng. ed. is by Samuel Buckley, 7 vols. 1733. T. wrote also a number of Latin poems.—See *Autobiography*, ending 1601; also Colinson, *Life of Thuanus* (Lond. 1807).

THOUGH, conj. *thō* [AS. *theah*; Icel. *tho*; Goth. *thauh*, though]: granting or admitting, as, 'though he slay me, yet will I trust in him;' notwithstanding; even if. AS **THOUGH**,

THOUGHT—THOWEL.

as if. *Note*—In familiar language, *though* is used as an adverb at the end of a sentence in the sense of *however*, *yet*, and is meant to render emphatic and affirmative the statement or opinion of the speaker—that, in spite of drawbacks, such ‘was or would be’—as, ‘his division was successful *though*.’

THOUGHT, *v.* *tharot*: pt. and pp. of THINK (q.v.).

THOUGHT, *n.* *tharot* [AS. *theaht* or *thoht*, thought—from *thencan*, to think: Icel. *thotti*, thought (see THINK)]: that which the mind thinks; the act of thinking; the state of the mind when attending to a particular subject; inward reasoning; an idea; a conception; fancy; imagination; meditation; judgment; solicitude; design or purpose; in *familiar language*, small quantity, slight degree, as, ‘I am a *thought* better.’ THOUGHTFUL, *a.* *-fúl*, full of thought; having the mind directed to some object; anxious; attentive; considerate. THOUGHTFULLY, *ad.* *-lí*. THOUGHTFULNESS, *n.* *-nēs*, deep meditation; solicitude. THOUGHTLESS, *a.* *-lēs*, without thought; careless; airy; gay; negligent; stupid; dull. THOUGHTLESSLY, *ad.* *-lí*. THOUGHTLESSNESS, *n.* *-nēs*, the state or quality of being thoughtless; heedlessness; inattention. THOUGHT-SICK, *n.* *-sík*, in *OH.*, uneasy with reflection. SECOND THOUGHTS, closer consideration; calmer reflection.—SYN. of ‘thought’: idea; sentiment; fancy; conceit; reflection; conception; opinion; judgment; design; meditation; purpose; solicitude; care; concern; expectation; attention; anxiety; imagination; notion; supposition; consideration; contemplation; circumspection.

THOUROUT, *tó-rót'*: town of Belgium, province of w. Flanders, 11 m. w.s.w. of Bruges. There are manufactures of starch, mustard, hats, and wooden shoes. T. was a place of great commercial importance in the middle ages. Pop. (1880) more than 8,000; (1890) 9,464.

THOUSAND, *n.* *thow'zánd* [Goth. *thusundi*; Icel. *thúsund*; Dan. *tusind*; Sw. *tusen*; Lith. *tukstantis*, a thousand]: the number ten hundred; any great number: ADJ. denoting ten hundred, or any great number. THOUSANDFOLD, *a.* multiplied by a thousand. THOUSANDTH, *n.* *-zándth*, the ten hundredth part of anything: ADJ. denoting one part of a thousand equal parts; next after the nine hundred and ninety-ninth; the ordinal of thousand.

THOUSAND AND ONE NIGHTS: see ARABIAN NIGHTS' ENTERTAINMENTS.

THOUSAND ISLES: small islands, numbering 1,500 to 1,800, in the St. Lawrence river; extending about 40 m. from the emerging of the river from Lake Ontario toward its mouth. They are partly in Ontario, Can., and partly in Jefferson and St. Lawrence cos., N. Y. From the picturesque river scenery of these islands with the numerous channels that wind among them, many of them have become summer homes for residents of cities, and the whole group is a favorite summer resort for tourists and pleasure-seekers.

THOWEL, or THOWL: see THOLE 1.

THRACE.

THRACE, *thrās*, or *thrāsē*: anciently an extensive region bounded n. by the Danube, e. by the Euxine, s. by the Ægean and Macedonia, w. by Macedonia and Illyria. In prehistorical times, however, the name appears to have denoted the whole of e. Europe n. of Greece, including Macedonia and Scythia; at least this is the inference from the fable that Oceanus had four daughters—Asia, Libya, Europa, and Thracia. It is, on the whole, very mountainous—whence, perhaps, its name T., from *tracheia*, rugged (?)—the principal range being Hæmus (mod. *Balkan*, q. v.), from which three lesser chains branch s.e., the loftiest being Rhodope, whose summits rise above 8,000 ft. The three most important rivers are the Strymon (mod. *Struma*), which, during the Greek period, formed the boundary between it and Macedonia; the Nestus (mod. *Carasu*); and the Hebrus (mod. *Maritza*, q. v.), the largest—all flowing s. from Hæmus into the Ægean Sea. Roughly speaking, ancient T., before the rise of the Macedonian power, comprised the territory now divided by the Turks into the provinces of Rumili and Bulgaria; but subsequently the Romans made the range of Hæmus the n. limit of T., and gave the region between Hæmus and the Danube the name of Mœsia (mod. *Bulgaria*). The climate was considered by the Greeks very severe—even that of Ænos, on the shores of the Ægean, being described by Athenæus as ‘eight months of cold and four months of winter;’ but it is believed that the ancient accounts are much exaggerated or are only poetically applied to T. as *the North*, though it is not to be denied that, in the mountainous districts, the frost was, and is, often intense. The country was marshy, undrained, and overspread with dense damp forests (of fir, oak, chestnut, etc.), which must have lowered the temperature; but large portions, especially in the s. and e., ‘such as the great plain of Adrianople and the land toward the lower course of the rivers Nestus and Hebrus,’ were very fertile. The chief products were corn, millet, wine, and hemp. Cattle, sheep, horses, and swine were reared in great numbers. The region between the Nestus and the Strymon appears to have been infested by lions. Herodotus states that they attacked the baggage-camels of Xerxes on his march; but these animals have certainly long since disappeared. Gold and silver mines were numerous and productive in the same locality, and acquisition of these was a principal motive for Philip of Macedon’s aggressions.

The question, much discussed, as to what race the Thracians belonged, is not yet settled. It is certain, however, that two different peoples went by this name in early times. It is repeatedly asserted by those writers who treat of the confused medley of tradition and myth which fills up the prehistoric annals of Greece, that a race of ‘Thracians’ inhabited part of the Hellenic peninsula, and had at one time extended as far as Attica. To these prehistoric Thracians belonged, says Strabo, the Muses, and the cultivators of ancient music, Orpheus, Musæus,

Thamyris, and Eumolpus; and the grand argument against confounding them with the Thracians of history, is the impossibility of a race so notoriously barbarous as the latter in language and manners, having sprung from the authors of Hellenic literature and art (see Müller's *Hist. of Greek Lit.*, p. 26 *et seq.*). But whether the prehistoric Thracians were properly Hellenes, or 'Pelasgians'—whatever *that* may mean—is indeterminable.

Passing now to the historic Thracians, whom we find settled in the regions n. and e. of Macedonia, we are again at fault. Of their manners and customs, of their character, and their later history, we know something; but of their origin and ethnological relations, scarcely anything. They were not Greeks, for they spoke a language which the latter called barbarous; but if (as Strabo asserts) the Getæ and Daci were branches of the Thracian family, and spoke the same tongue, we may conjecture that, ethnologically, the term 'Thracians' denotes a mixed Illyrico-Scythian race; though it is impossible, from lack of evidence, to substantiate the conjecture. Herodotus, Xenophon, and Strabo are our chief authorities regarding the habits and practices of the people. From them we learn that they bought their wives, and sold their children. Polygamy was general, and when a husband died his favorite spouse was slain over his grave. Before marriage the Thracian women had the utmost liberty; after it, they were guarded with Turkish rigor. War and robbery were the only honorable occupations of the men. They lived to steal, either from each other or from neighboring peoples. When not fighting or plundering, they spent their days in savage idleness, or in quarrelling over their cups. Courageous, or rather ferocious, after the fashion of barbarous peoples, they lacked the steady valor and endurance of disciplined troops; at all times their warfare displayed more fierceness and impetuosity than fortitude. Their treachery was probably no greater than that of other barbarians.

The history of T. may be sketched in few words. The Greeks became acquainted with the inhabitants first when they began to plant Grecian colonies on the coasts. Of these, the principal were Byzantium (B.C. 675), Selymbria, Abdera (B.C. 560), Mesembria, Dicea, Maronea Ænus, Cardia, Sestus, Amphipolis, etc.; but their lack of union—the fatal weakness of Hellenic civilization—hindered them from acquiring firm power, and enabled the Thracian chiefs of the interior to preserve their independence. Darius, King of Persia, marched through T. (B.C. 513) on his way to punish the European Scythians; and on his return left Megabazus, with 80,000 men, to subdue the country. In this he partially succeeded, but new disturbances and complications arose between the Persians and Greeks, which resulted (B.C. 480) in the famous expedition of Xerxes, whose details do not belong to Thracian history. A consequence of the expulsion of the Persians from Europe was the resumption of liberty and the revival of prosperity among the Greek colonies in Thrace. Shortly

THRALE—THRASHER.

before the Peloponnesian War, a native Thracian state—the Odrysian—had attained great power and eminence under a ruler named Sitalces, who joined the Athenian alliance, but could not, with all his resources, prevent the triumph of Sparta in the north as well as in the south. The rise of the Macedonian kingdom, under Philip II. (B.C. 359), destroyed the independence of great part of T.: all the region between the Strymon and Nestus was incorporated with Macedonia, and Macedonian garrisons were established further east. Under the govt. of Lysimachus, the subjugation of T. became complete. On the fall of the Macedonian kingdom (B.C. 168), T. passed into the hands of the Romans, and subsequently shared the vicissitudes of the Roman empire. In A.D. 334, a colony of Sarmatians was planted in T. by Constantine, and 376 another of Goths by permission of Valens. In 395 it was overrun by Alaric, and 447 by Attila. In 1353 Amurath obtained possession of all its fortresses, except Constantinople, and it has since remained subject to Turkey.—See BULGARIA: ROUMELIA, EASTERN.

THRALE, Mrs. HENRY: see PIOZZI, HESTER LYNCH (SALUSBURY) [THRALE].

THRALL, *v.* *thrawl* [Icel. *thrall*; Sw. *träl*; Dan. *træl*; OHG. *trigil*, a slave]: in *OE.*, to enthrall; to enslave: *N.* a slave; a serf; a bondman; slavery; bondage. THRALL'ING, *imp.* THRALLED, *pp.* *thrawd.* THRAL'DOM, *n.* *-döm*, bondage; slavery; the state of a thrall or serf; servitude.

THRANG, *a.* *thräng* [see THRONG]: in *Scot.*, crowded; busy; intimate; familiar; thick.

THRAP, *v.* *thräp*: in *prov. Eng.* and *OE.*, to crowd; to wrap or bind on. THRAP'PING, *imp.* THRAPPED, *pp.* *thräpt.*

THRAPPLE, *n.* *thräp'pl* [AS. *throt-bolla*, the throat-pipe]: in *Scot.*, the windpipe of an animal: *V.* to seize forcibly by the throat; strangle; choke. THRAP'PLING, *imp.* *-pling.* THRAP'PLED, *pp.* *-pld.* Also spelled THROPPLE.

THRASH, *v.* *thräsh* [see THRESH]: to beat, as with a flail (see THRESH); to beat soundly; drub. THRASH'ING, *imp.*: *N.* a sound drubbing. THRASHED, *pp.* *thräshd.* THRASHER, *n.* *-ër*, one who thrashes (see THRESHER). THRASHING-MACHINE, a threshing-machine (see THRESHING).

THRASH'ER, corruption of *Thresher*: name applied to a family of sharks (*Alopiidæ*) tail as long as the body, and eye with no nictitating membrane; one species only is known (*Alopias vulpes*), sometimes called Fox shark or Swingle-tail; it is 20 ft. long, and occasional near our Atlantic coast.—The term in its corrupt form is given also to some birds of the Thrush family (*Turdidæ*), now oddly placed by the American Ornithological Union with the wrens (*Troglodytidæ*); such as the T. or Brown T. (*Harporrhynchus rufus*) of the e. United States, familiar as a reddish-brown bird, about 11 in. long, with spotted breast; it is a fine singer.

THRASIMENE—THREAT.

✓ **THRA'SIMENE, LAKE:** see *TRASIMENUS LACUS*.

THRASONICAL, a. *thrā-sōn'ī-kāl* [from *Thraso*, a military braggart in Terence's *Eunuchus*—from Gr. *thrasus*, bold]: vainglorious; boastful.

THRAVE, n. *thrāv* [Dan. *trave*, a score of sheaves: Icel. *threfi*, twelve sheaves: Sw. *trafwe*, a pile of wood: Icel. *thrifu*, to gripe—*lit.*, a handful]: in *OE.* and *Scot.*, two dozen; twenty-four sheaves of wheat; two stooks of grain; also **THREAVE** (q.v.).

THREAD, n. *thrēd* [Dut. *draad*; Icel. *thradr*; Dan. *traad*; Ger. *draht*, thread—from Ger. *drehen*; Dut. *draaijen*, to turn, to twist]: a thin twisted filament or cord of fibrous substance; specifically, a fine cord consisting of two or more filaments or yarns twisted together, used in some kinds of weaving, but more particularly for sewing, as cotton, linen, or silk *thread*; any fine filament or line; the prominent spiral part of a screw; something continued, as the *thread* of a discourse: V. to pass a thread through, as the eye of a needle; to pass or pierce through, as a narrow or intricate way. **THREAD'ING**, imp. **THREAD'ED**, pp. **THREAD'EN**, a. -*n*, in *OE.*, made of thread. **THREAD'Y**, a. -*ī*, like thread; containing thread or threads. **THREAD'INESS**, n. -*nēs*, the state of being thread-like, or drawn out into threads. **THREAD'ER**, n. -*ēr*, one who threads. **THREAD'BARE**, a. worn to the threads, or deprived of the nap, as cloth; worn out; used till it has lost its interest or novelty; hackneyed; trite. **THREAD'BARENESS**, n. the state of being threadbare or hackneyed. **THREAD-SHAPED**, a. in *bot.*, in the form of a filament or thread.

THREAD-WORMS: term applied by some zoologists to the whole order *Nematoidea* (q.v.). Most writers, however, restrict it to the *Oxyuridæ*—by some included in the *Ascarides* (q.v.); but arranged in a separate family by Cobbold, who divides them into ten genera. Only one species, *Oxyuris vermicularis* (formerly known as *Ascaris vermicularis*) (q.v.), the small thread-worm, infests man, and is the commonest of the intestinal parasites.

THREAP, or **THREEP**, v. *thrēp* [AS. *threapian*, to reprove]: in *Scot.* and *OE.*, to urge or aver with pertinacity; to argue; to contend; insist. **THREAP'ING**, imp. **THREAPED**, pp. *thrēpt*.

THREAT, n. *thrēt* [AS. *threat*, a crowd of people, a threat; *threan*, to reprove: Icel. *thræta*, to threaten: Goth. *thriutan*, to vex greatly]: an avowed determination to inflict punishment or injury on another; a menace: V. to threaten. **THREATEN**, v. *thrēt'n*, to announce a purpose of inflicting punishment or injury on; to attempt to terrify by threats or menaces; to present the appearance of coming evil; to exhibit the appearance of some coming danger or evil. **THREATENING**, imp. *thrēt'ning*: **ADJ.** indicating a menace or some evil or danger impending: N. the declaration of a purpose to inflict evil; a denunciation of evil; a menace. **THREATENED**, pp. *thrēt'nd*. **THREATENER**, n. *thrēt'nēr*, one who threatens. **THREAT'ENINGLY**, ad. -*lī*. **THREATENING LETTERS**, letters containing threats of vio-

THREATS—THREE KINGS.

lence, or injury to person, reputation, or the like, sent to one in order to extort money, or coerce into some particular course of action—an offense punishable with imprisonment or penal servitude (see **THREATS**).

THREATS, in Law: that kind of intimidation whose object is to cause a person to abandon or surrender some legal right, or what is equivalent, to pay money, to prevent some injury being done to him. When the threats are made by more than two persons, the offense usually assumes the form of Conspiracy (q.v.). In other cases, the usual form of the offense is the sending of a threatening letter—anonymous or otherwise—demanding money from the party addressed; otherwise, that he will be murdered, or his house will be burned, or he will be charged with some infamous crime. The sending, bearing, etc., of such a letter is in all the states of the Union an indictable offense; but in some of the states the threat must have been made ‘maliciously,’ in others ‘knowingly,’ to make it indictable.

THREAVE, n. *thrēv* [same as **THRAVE** (q.v.)]: in *OE.*, a drove; a throng; a crowd; a heap; in *Scot.*, twenty-four sheaves of corn, comprising two shocks or stooks; a considerable number.

THREE, n. a. *thrē* [Dut. *drie*; Dan. *tre*; Goth. *threis*; Lith. *trys*; L. *tres*; Gr. *treis*; Skr. *tri*, three]: two and one. **THREE-DEEP**, a. in rows of three running across the length. **THREEFOLD**, a. thrice repeated. **THREE-COAT-WORK**, a plastering consisting of picking-up, roughing-in, floating, and finishing. **THREE-PILE**, an old name for velvet of a good quality. **THREE-PILED**, a. *-pīld*, in *OE.*, covered with a good thick pile, as velvet; having a triple pile or nap; heaped one upon another. **THREE-PLY**, a. of three thicknesses; consisting of three webs inwrought together in weaving; threefold. **THREE-SCORE**, three times twenty; sixty. **RULE OF THREE**: see under **RULE**. **THREE ESTATES**: see under **ESTATE**.

THREE HOURS' AGONY, or **THREE HOURS' SERVICE**. in *eccles.* and *chh. hist.*, a devotion in commemoration of Christ's passion on the cross, practiced on Good Friday, from noon till three o'clock. It was introduced into the English Church about 1865.

THREE KINGS, FEAST OF THE: famous mediæval festival, identical with Epiphany (q.v.) or Twelfth Night, and designed to commemorate the visit of the three magi or wise men of the East (transformed by the mingled ignorance and reverence of the middle ages into great kings) to the infant Saviour (see **MAGI**). But the name is given especially to a kind of dramatic or spectacular representation of the incidents recorded in Matt. ii., e.g., the appearance of the wise men in splendid pomp at the court of Herod, the miraculous star, the manger at Bethlehem, the solemn and costly worship of the Babe—which was long very popular. In 1336 a peculiarly gorgeous representation was given at Milan by the Preaching Friars. See Chambers's *Book of Days*, I. 62.

THREE RIVERS—THRESHING.

THREE RIVERS: city, port of entry, and cap. of St. Maurice co., Quebec, Canada; on St. Lawrence river, and on the Canadian Pacific railroad. It has a daily steamboat communication with Quebec and Montreal and a ferry-boat line to Doucett's on the opposite side of the river. T. R. has large iron and lumber interests and considerable general commerce; is the seat of a Rom. Cath. bp.; and contains a grand cathedral, college, acad., hospital, several convents, court-house, 5 churches; and 1 semi-weekly, 1 weekly, and 2 bi-weekly newspapers.—Pop. (1890) 10,583.

THRENE, n. *thrēn* [Gr. *thrēnos*, a wailing—from *threomai*, I cry aloud]: in *OE.*, a lamentation; a complaint. **THRENETIC**, a. *thrē-nēt'ik*, or **THRENET'ICAL**, a. *-ī-kāl* [Gr. *thrēnētikos*, inclined to mourning]: sorrowful; mournful. **THRENODY**, n. *thrēn'ō-dī* [Gr. *ōdē*, a song]: a song of lamentation.

THRESH, v. *thrěsh*, or **THRASH**, v. *thrāsh* [imitative of the sound: ME. *threshen*; Icel. *threskja*; Dan. *tørske*; Ger. *dreschen*; Goth. *thriskan*, to thresh]: to beat, as with a flail, in order to separate the grain or seed from the straw (see **THRESH'ING**, below); to beat soundly; drub. **THRESH'ER**, n. *-ēr*, one who threshes grain from the straw; a threshing-machine; the sea-fox, a kind of shark (see **FOX SHARK**). **THRESHING**, imp.: N. the separation of the grain or seeds of plants from the straw or haulm by some beating action (see below). **THRESHING-FLOOR**, the floor or level spot on which grain is beaten out, as by the flail, the treading of oxen, etc. **THRESHING-MACHINE**, a machine operated by steam, water, or horse-power, for threshing grain (see **THRESHING**, below). *Note.*—*Thrash* and *thresh* are both in common use; the latter is the more correct, the former the more colloquial, and is the form generally used in the sense of 'drub.'

THRESH'ING: process of separating the grain or seeds of plants from the straw or haulm. The first method known to have been practiced was the beating out of the grain from the ears with a stick. An improvement was the practice of the ancient Egyptians and Israelites to spread out the loosened sheaves of grain on a circular piece of hard ground 50–100 ft. in diameter, and to drive oxen forward and back over it, so as to tread the grain out; but as this mode damaged a portion of the grain, it was partially superseded in later times by the threshing-sledge (Egypt. *noreg*, cf. Heb. *moreg*), a heavy frame mounted on three rollers, which was dragged over the heaps of sheaves. The use of the stick was, however, retained for threshing lighter kinds of grain. Similar methods of threshing were employed by the Greeks and Romans; but their threshing-sledge, still seen in operation in Greece, Asia Minor, Georgia, and Syria, differed from the eastern one by having pieces of iron or sharp flints fastened to the lower side in place of rollers. The primitive implement in n. Europe was the stick; and an improved modification of it, the *flail*, is still sometimes used there and on small farms in the United States. The flail consists of two sticks loosely fast-

THRESHOLD.

ened together at one end by stout thongs (*caplins*); one stick (the *hand-staff*) is used as a handle by the workman, and by a circular swing round his head he brings down the other stick (the *swiple* or *swingle*) horizontally on the heads of the loosened sheaves spread out on the barn-floor. The average number of bushels of grain which one man can thresh and clean in a day is about 7 of wheat, 8 of rye, 15 of barley, 18 of oats, and 20 of buckwheat.

The first threshing-machine of modern times which was at all practical was invented and patented by Michael Menzies, of Edinburgh, Scotland, 1732. It consisted of several flails similar to those used by hand, was operated by water-power, and did fairly good work, but was not durable. Other machines, on different principles, were constructed; but nothing satisfactory was secured till Andrew Meikle, Scotch millwright, invented, about 1776, a machine which, a few years later, he brought to such perfection that many of its essential features are retained in the recent forms. Until a comparatively recent period, several men were required with each machine, to separate the grain from the straw and clean it from the chaff; but the improved forms shell, separate, clean, and measure the grain, and by means of an elevator carry the straw to a mow or stack. The grain is shelled by passing it under a rapidly revolving cylinder containing many spikes and running in a concave bed from which numerous spikes protrude. On some of the great wheat-farms of the w., grain is threshed as it is harvested (see REAPING). A good T.-machine driven by two horses will thresh and clean about the following number of bushels of grain per day: wheat 160, rye 170, barley 200, oats 300, and buckwheat 250. A large steam-power machine will thresh and clean 5 to 8 times these quantities. Machines for threshing corn, called corn-shellors, are made in a variety of styles for hand, horse, or steam power. Special machines are made for threshing rice; and others for shelling, hulling, and cleaning clover-seed. As there is extreme variation in the proportion of clover-seed to the heads, the capacity of a good machine for cleaning it ranges from 20 to 100 bushels per day. Machines are made also for threshing rye when it is desired to keep the straw even and unbroken, so that it can be bound in bundles and sold for manufacturing or other purposes: they will shell and clean 200 to 300 bushels of grain per day. If the grain is quite ripe, threshing can be done immediately after harvesting; but if the kernel is not then hard, the work should be delayed a few days or weeks, till ripening is complete. When this point is reached, threshing is to be promptly done, to prevent loss of grain by depredations of rats. As machines do the work more thoroughly as well as more rapidly than hand-labor, their use is found desirable wherever large quantities of grain are produced.

THRESHOLD, n. *thrēsh'öld* [OE. *threswold*; AS. *therscwald*; Icel. *threskjöldr*, a threshold: AS. *therscan*, to thresh; *weald* or *wald*, a wood]: the bar on which we tread in entering a house; the door-sill; gate; entrance; the point of entering or beginning; outset, as of an enterprise.

THREW—THRINAX.

THREW, v. *thró*: pt. of THROW (q.v.).

THRICE, ad. *thrīs* [from Eng. *three*]: three times; very highly; a word of amplification, as thrice-happy. THRICE-FAVORED, a. highly favored.

THRID, n. v. *thrīd*: a variant of *Thread* (q.v.).

THRIFT, n. *thrīft* [from Eng. *thrive*]: a thriving state or condition; economical management in regard to means or property; economy; sparingness; frugality; parsimony; the *Armeria maritima*, ord. *Plumbag'inācēæ*, or sea-pink (see below). THRIFT'Y, a. -ī, economical; careful; industrious and frugal; prudent in the management of property; in *OE.*, well-husbanded. THRIFT'ILY, ad. -lī. THRIFT'INESS, n. -nēs, economical management of property; frugality. THRIFT'LESS, a. -lēś, lacking in thrift; extravagant. THRIFT'LESSLY, ad. -lī. THRIFT'LESSNESS, n. -nēs, the state or quality of being without economy or frugality.

THRIFT: plant of the genus *Armeria*, nat. order *Plumbaginēæ*, having the flowers collected into a rounded head, a funnel-shaped dry and membranous calyx, five petals united at the base, five distinct styles, and five stamens attached to the base of the petals. By many botanists this genus has been regarded as a subdivision of the genus *Statice*, from which it is distinguished chiefly by having the flowers in heads.—The Common T. (*A. maritima* or *vulgaris*) grows in turf-like tufts, with linear leaves, scapes a few inches high, and beautiful rose-colored flowers, an ornament of the sea-coasts of Europe, and frequent on high mountains. It is often planted in gardens as an edging, for which it is very suitable, being of a fresh green all the year, and exhibiting its fine flowers in profusion in July and August; but it requires to be renewed every two or three years. the smallest rootless sets growing, however, with great readiness, in the moist weather of spring. The flowers are an active and useful diuretic. From two drams to an ounce of the flowers freshly gathered and quickly dried, should be gently boiled, and the patient allowed to drink at will of the decoction. Some aromatic, as anise or cinnamon, is added.

THRILL, v. *thrīl* [a form of THIRL 1: comp. also DRILL 1: AS. *thyrlian*, to pierce]: to pierce; to penetrate; to have the quality of piercing; to penetrate with a sharp tingling sensation or wave of feeling; to feel a sharp tingling sensation throughout the whole body; to shiver; to quiver: N. a sharp tingling sensation; a sudden permeating wave of feeling, as of horror. THRILL'ING, imp.: ADJ. causing or fitted to cause a thrill, as a *thrilling* adventure. THRILLED, pp *thrīld*. THRILL'INGLY, ad. -lī. THRILL'INGNESS, n. -nēs, the quality of being thrilling.

THRINAX, n. *thrī'nāks* [Gr. *thrinax*, a fan]: a genus of W. I. fan-palms, ord. *Palmācēæ*—so named from their fan-shaped leaves.

THRIPS—THROAT.

THRIPS, n. *thrips* [Gr. *thrips*, a wood-worm]. genus of small insects, forming the order *Thysanop'tera*; a kind of blight on some trees, caused by the insect.—Thrips is allied to *Aphis* (q.v.), and included in the family *Aphidii* of some etymologists. The species are numerous, and widely distributed. They are very active, and some of them very injurious to cultivated plants, on whose juices they feed. When disturbed, though they use their wings, their motion resembles leaping rather than flying. The wings are much fringed. A common Brit. species is *T. cerealium*, an insect not a line in length or in extent of wing, which resides in the spathes and husks of cereal grasses, particularly wheat and rye, in the beginning of summer, causing the grain to shrivel; and which at an earlier season causes the abortion of the ear by puncturing the stems above the joints. It is most injurious to late-sown wheat, probably because the plants are weak, and therefore easily injured, at the time when the *Thrips* abounds. The larva is deep yellow, part of the head and two spots on the thorax dusky. The pupa is pale yellow and active. The perfect insect is flat, smooth, and pitch-color. The male is wingless, the female winged.

THRIS, n. *thris'să* [Gr. *thrissa*, a kind of anchovy full of small hair-like bones—from *thrix*, a hair or bristle]: a fish of the shad and herring kind whose flesh is considered as sometimes poisonous, found in the waters of tropical countries.

THRIVE, v. *thriv* [Icel. *thrifa*, to seize, to lay hold of; *thrifask*, to thrive: Sw. *trivas*; Dan. *trives*, to thrive: Norw. *triva*, to snatch]: to prosper, particularly by economy and good management; to increase in goods and property; to flourish; to grow. **THRIVING**, imp.: **ADJ.** prosperous or successful; increasing: **N.** act of growing; growth; healthful increase. **THRIVINGNESS**, n. *-nēs*, the state of being prosperous. **THRIVED**, pt. *thrīvd*, or **THROVE**, pt. *thrōv*, did thrive. **THRIVEN**, pp. *thrīv'n*. **THRIVINGLY**, ad. *thrī'ving-lī*. **THRIVER**, n. *-vēr*, one who thrives.

THRO', *thrō*: a short form of **THROUGH** (q.v.).

THROAT, n. *thrōt* [AS. *throta*; Dut. *strot*; It. *strozza*, the throat]: the fore part of the neck, in which are the gullet and the windpipe or trachea; the passage from the mouth to the stomach or lungs; the contracting part of a chimney; in *ship-building*, the hollow inside part of a knee-timber; the entrance, as of a gorge or valley. **TO CUT ONE'S THROAT**, to murder one. **CUT-THROAT**, a man capable of any violence or any crime. **TO LIE IN ONE'S THROAT**, to tell a monstrous falsehood; to lie flatly.

THROAT DISEASES.

THROAT DISEASES: important class of disorders, including some serious and fatal maladies. For common inflammatory sore throat (Tonsillitis), see QUINSY: for other important throat diseases, see APHTHÆ: THRUSH: DIPHTHERIA: LARYNGITIS: PHARYNGITIS: BRONCHITIS: CROUP. The *malignant sore throat* of the older nosologists is now recognized as a modification of Scarlatina (q.v.). Another important variety of sore throat occurs as one of the forms of secondary syphilis. For *Bronchocele* or *Goitre*, which, to a certain degree, is an affection of the throat, see GOITRE.

The disease *Follicular Inflammation of the Pharynx* (called sometimes Clergyman's Sore Throat, or *Dysphonia Clericorum*), shows itself first by huskiness of the voice, with more or less coughing, hawking, and expectorating from an uneasy sensation in the throat; there is, moreover, constant inclination to swallow. On examining the back of the throat, its mucous membrane is seen covered with granulations, caused by an accumulation of secretion in the follicles, which sometimes burst and discharge their contents, which are of elastic consistent nature: this discharge is occasionally followed by ulceration. The disease commonly arises from too prolonged or powerful exercise (or too sudden exercise after several days of quietness) of the voice by persons in whom the mucous membrane of the throat is in relaxed condition. Perfect rest from public speaking, preaching, acting, etc., is more important than anything else in treatment, and a winter and spring residence in a mild and equable climate is expedient. Tonics, such as iron, quinia, and—only under medical prescription—strychnia (in small doses not exceeding $\frac{1}{20}$ of a grain, three times a day), should be tried; but the local application of a strong solution of nitrate of silver (20 to 80 grains in one ounce of distilled water) applied by a probang to the affected mucous membrane, is usually of far more service than internal remedies. A good treatise on this subject is by Horace Green, M.D., of New York.

Wounds in the Throat.—These are comparatively seldom the result of accident; they are more often made with suicidal or murderous intent. The first duty of the surgeon in a case of cut throat, is to arrest the flow of blood. Ligatures should be applied to wounded arteries, and steady pressure with the finger (beneath which a small pad of lint is placed) to wounded veins, such as the external jugular. If the internal jugular is wounded, fatal hemorrhage will very rapidly ensue, unless the wound is immediately plugged with small pieces of sponge, or pressure with the finger is maintained as long as necessary. With a knowledge of these means of checking hemorrhage by pressure, an intelligent non-professional person may be the means of saving life. When the bleeding has completely ceased, but not till then, means may be taken for bringing together the edges of the wound. In most cases, sutures, or even adhesive plaster, are inexpedient and even dangerous, and it is best to keep the parts in simple apposition. The patient should be placed in bed in a moderate-

THROB—THRONDIJEM.

ly warm room, the shoulders well raised by pillows, and the head bent forward and retained in that position by a bandage, and the wound should be covered with a strip of wet lint or linen.

THROB, *v.* *thrōb* [Ger. *trab*, representing the jolting trot of a horse: Sw. *trubb*, originally signified 'a jog;' *drabba*, to strike against, to knock: Russ. *trepai'*, to knock gently: L. *trepidus*, anxious, alarmed]: to heave or beat with more than usual force and rapidity, as the heart or pulse; to palpitate: *N.* a beat or strong pulsation, as of the heart. **THROB'ING**, *imp.*: **ADJ.** beating with unusual force, as the heart or pulse: *N.* act of beating with unusual force, as the heart. **THROBBED**, *pp.* *thrōbd.* **THROBBING PAIN**, a pain seemingly increased or caused by the pulsation of arteries.

THROE, *n.* *thrō* [Icel. *thrá*, a throw: AS. *thrawan*, to twist: Scot. *thraw*, to wreathe, to twist (see **THROW**)]: violent pang; extreme pain or agony; the pains of travail or childbirth: *V.* to put in agonies; to be in agony.

THROMBUS, *n.* *thrōm'būs* [Gr. *thrombos*, a clot of blood]: in *surg.*, a plug formed in a vessel during life, or some time before death, generally in veins, but it may occur in an artery, or even in the heart. **THROMBOSIS**, *n.* *thrōm-bō'sis* [Gr. *thrōmbōsis*, a curdling or coagulation]: an affection of the blood-vessels (either veins or arteries), which consists essentially in a coagulation of blood (forming a true clot) at a certain fixed spot. Under certain morbid conditions the blood has a tendency to coagulate in its vessels during life, on the least provocation. Thus, slight pressure on the side of a vein will sometimes induce this coagulation; in other cases it is due to inflammation of the tissues which surround a vein, or laceration of a vein (as when the placenta is expelled from the uterus). A clot thus formed in a vessel increases and extends from one to another, till it reaches and finally fills a large vessel. Clots of this kind occurring in veins have been noticed from the times of Ambrose Paré and Petit, who seem to have been the first to apply the term *thrombus* to them. See **EMBOLISM**.

THRONDIJEM, or **TRONDIJEM**, *trōnd'yēm* (Ger. *Drontheim*): town, the ancient Nidaros, and former cap. of Norway; in the Fjord of T., at the mouth of the little river Nid, 240 m. n. of Christiania. It consists of the old town, founded 997, and the suburbs Blakland and Ilen; and is built on the picturesque and undulating slopes of the Nid-Elv, and has regular and broad streets. The fortified islands of Munkholm and Christiansteen defend the capacious harbor, never closed by frost on the seaward side. Among the public buildings most noteworthy are the Kongens-Gaard, or old palace, and St. Olaf's Church, the remains of the old cathedral, now partially restored, built 12th c. by Abp. Oeysteen, who erected this noble Gothic pile on the site of the two early Christian churches, founded by Harald Haardrade and Olaf II. The fine western extremity of the nave was not completed till 1248. The body of the murdered St. Olaf was preserved within

THRONE—THROSTLE.

a costly shrine in the chancel of Christ Church, which ranked as the metropolitan church of Norway, where the kings of Norway have been crowned since the time of Magnus V. (1164). T. is the seat of govt. for the province and of a bishopric; and has a public exchange, the principal national bank, a public library, museum, various literary and scientific institutions, an institution for the deaf and dumb, an insane asylum, etc. The chief articles of trade are fish, tar, and deal, and copper from the neighboring mines of Røros. Salted cod and herrings, plentiful at the entrance of T. Fjord, are important articles of export. Besides its shipping and coasting trade, T. is a manufacturing centre, and has good sugar-refineries, distilleries, etc. The environs are picturesque, and its position is attractive, notwithstanding its high latitude ($63^{\circ} 25'$); while the numerous historical events with which it is associated render it one of the most interesting towns in the Scandinavian kingdoms. The preponderance of wooden houses has diminished of late years; and the local authorities are endeavoring to enforce the use of stone for building purposes in consequence of the frequent occurrence of great fires.—Pop. (1885) est. 24,000; (1891) 24,746; (1900) 38,180.

THRONE, n. *thrôn* [L. *thrōnus*; Gr. *thrōnos*, a seat: F. *trône*]: a royal seat; a raised chair of state, usually richly ornamented and surmounted by a canopy, and intended for the use of a sovereign or other potentate: the seat of a bishop in his cathedral; metaphorically, sovereign power and dignity: V. to place on a royal seat; to exalt; to enthrone, as a bishop. **THRON'ING**, imp. **THRONED**, pp. *thrōnd*, placed on a royal seat; exalted. **THRONE'LESS**, a. -*lēs*, without a throne.

THRONG, n. *throng* [AS. *thrang*, a press or crowd: Dut. and Ger. *drang*, a throng; *dringen*, to press: Icel. *throng*, a throng: Dan. *trang*, pressed, narrow: Gael. *droing*, people]: a great number of individuals pressing or pressed into a close body; a crowd; an assemblage; a multitude: V. to crowd or press; to incommode with numbers crowding together; to come in multitudes; to fill with large numbers; to swarm: ADJ. in *Scot.* and *prov. Eng.*, swarming; crowded; busy. **THRONG'ING**, imp.: pressing together in great numbers: N. act of crowding together. **THRONGED**, pp. *throngd*: ADJ. filled with a multitude of persons pressing together.

THROPPLE, n. *thrōp'pl*: same as **THRAPPLE**.

THROSTLE, n. *thrōs'l* [Ger. *drossel*; Icel. *thröstr*; Norw. *trost*; L. *turdus*, a thrush (see **THRUSH** 1)]: the song-thrush; a machine for spinning cotton, wool, etc., from the rove (see **SPINNING**). **THROST'LING**, n. -*ling*, a morbid swelling in the throat in animals of the cow kind—probably so named from the *whistling* which accompanies the breathing of animals suffering from the disease.

THROTTLE—THROW.

THROTTLE, v. *thrōt'le* [from Eng. *throat*]: to prevent respiration by pressure on the windpipe; to choke; to strangle; to suffocate: N. the windpipe; the throat. **THROTTLING**, imp. *-tling*. **THROTTLED**, pp. *thrōt'ld*. **THROTTLE-VALVE**, a valve in the steam-pipe of an engine for regulating the supply of steam to the cylinder.

THROUGH, ad. *thrō* [Goth. *thairh*; Ger. *durch*; AS. *thurh*, through: L. *trans*, across]: from one end or side to the other; to the end or conclusion: **PREP.** from end to end of; from side to side of; expressing passage among or in the midst of; throughout; on account of; by means of. **THROUGHOUT**, ad. in every part: **PREP.** in every part of; from one extremity to the other. **THROUGHLY**, ad. *-lī*, in *OE.*, completely; fully; entirely; thoroughly. To **CARRY THROUGH**, to accomplish. To **FALL THROUGH**, to be given up, as a project or plan; to fail or be abandoned. To **GO THROUGH WITH**, to prosecute to the end, as a scheme. **THROUGH AND THROUGH**, completely through; pierced wholly from side to side. **THROUGH-TICKET**, a ticket for a whole journey. **THROUGH-TRAIN**, on a *railway*, a train which goes through to the end of the line or division.

THROVE, v. *thrōv*: pt. of **THRIVE** (q.v.).

THROW, v. *thrō* [original meaning, to turn or whirl, and thence, to cast or hurl: AS. *thrawan*, to twist: Scot. *thraw*, to wreathe or twist: W. *troi*, to turn: Ger. *drehen*, to turn, whirl: L. *torquēre*, to twist]: to turn or twist; especially in the *silk manufacture*, to form into threads by twisting two or more filaments together; to shape by turning as in a potter's wheel, a lathe or the like; to heave; to pitch or fling; to toss; to put or place carelessly; to overturn or prostrate, as in wrestling; to cast, as dice; to perform the act of hurling or casting; to bring forth young, as a rabbit: N. the act of hurling or flinging; a driving or propelling, as from the hand or from an engine; a cast, as of dice; the distance to which a thing is or may be thrown, as a stone's throw; in *OE.*, a short space of time; a little while; a stroke; a blow; an effort; in *mining*, a fault or dislocation of the strata, or the amount of vertical produced by such a fault (see **DISLOCATION**, in *Geology*). **THROW'ING**, imp. **THREW**, pt. *thrō*, did throw. **THROWN**, pp. *thrōn*, flung; sent to a distance. **THROWER**, n. *thrō'ér*, one who throws. **THROW'STER**, n. *-stér*, one who throws silk for the weaver. To **THROW ABOUT**, to scatter; to try expedients. To **THROW AWAY**, to lose by neglect or folly; to reject. To **THROW BACK**, to retort; to reject; to refuse. To **THROW BY**, to lay aside as useless. To **THROW DOWN**, to overturn; to destroy; to depress. To **THROW IN**, to put in; to deposit with others; to join in or with. To **THROW OFF**, to expel; to reject or discard. To **THROW ONE'S SELF DOWN**, to lie down. To **THROW ONE'S SELF ON OR UPON**, to resign one's self to the favor, clemency, or power of. To **THROW OUT**, to reject; to expel; to eject; to utter carelessly or insidiously; to emit; to confuse. To **THROW OVER**, to give up; abandon; cast off. To **THROW UP**, to resign; to vomit; emit; eject. To **THROW SILK**, to twist two or more singles into a cord, in a direction contrary to

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the twist of the singles themselves. **THROWN SILK**, silk consisting of two or more singles twisted into a cord. To **THROW UP THE SPONGE**, to yield or submit; to give up the contest—in allusion to the custom in pugilistic encounters of tossing up the wet sponge used to wipe the face during the fight in token of the submission of one of the combatants.

THROWSTER: see under **THROW**.

THRUM, n. *thrūm* [Ger. *trumm*, a short thick piece, stump, end: Icel. *thrömr*, a thrum, brim of a thing: Norw. *trumm*, edge, brim]: the ends of weavers' threads which remain attached to the loom when the completed web has been cut off; any coarse yarn or loose threads: V. to stick short pieces of yarn through; to knot; to fringe. **THRUMMING**, imp.: **ADJ.** knotting; twisting. **THRUMMED**, pp. *thrūmd*. **THRUMMY**, a. *thrūm'mī*, containing or resembling thrums. **THRUM-EYED**, a. *thrūm'id*, in *bot.*, having short styles, applied to flowers, especially of *Primula*, when the stigma does not appear at the upper part of the tube of the corolla.

THRUM, v. *thrūm* [Icel. *thruma*, to make a noise, to thunder: Sw. *trumma*, to drum (see **DRUM**)]: to play idly or unskilfully with the fingers on a stringed instrument; to make a dull noise, as by beating or drumming with the fingers on wood.

THRUSH, n. *thrūsh* [AS. *thrysce*; OHG. *droscā*; Icel. *thröstr*; Sw. *trast*, a thrush]: a singing bird of various species; the mavis; bird of the family *Turdidæ*; having booted tarsus, wing more than 3 in., and the young spotted; and, especially of the genus *Turdus*, the adult with spotted breast. The species are numerous and widely distributed, some inhabiting temperate, and some found only in tropical regions. The common Brit. species are the Blackbird (q.v.), Fieldfare (q.v.), Redwing (q.v.), Ring Ouzel (q.v.), Song T., and Missel Thrush.—The **SONG T.**, or **THROSTLE** (*T. musicus* or *Merula musica*), the mavis of the Scotch, is not quite 9 inches in length. Its plumage is brown, of various finely-mingled shades; throat, sides of the neck, breast, and flanks yellowish, spotted with dark brown; belly nearly white, with a few spots of dark brown. It is found in all parts of Europe. The throstle is well known as one of the sweetest songsters of the groves. In captivity, it has been taught simple airs.—The **MISSSEL T.** (*T. viscivorus* or *M. viscivora*) is about 11 inches in entire length, and is the largest and strongest European species of the genus. The plumage is very similar to that of the Song Thrush; but the tail is slightly forked, differing from that species; and the spots on the belly are more numerous, and black. The song is loud and clear, but not equal to that of the Song T. or of the blackbird. The bird delights in pouring forth its song from the very top of a tall tree. It also very often sings before or during wind and rain, whence it has the name Storm-cock. Its range extends through great part of Asia.

Of the Amer. thrushes, the Wood T. (*Turdus musteli*)

THRUSH.

nus), a charming singer of e. N. Amer., has cinnamon-brown color most distinct on the head; the Hermit T. (*T. Pallasii*, lately changed by absurd priority to unmusical *aonalaschkæ*, referring to Unalaska Island), is of N. Amer. generally, very musical, and has the above color chiefly on the tail; the Tawny or Wilson's T. (*T. fuscescens*), of e. N. Amer., has a greater range of notes than those above mentioned, and has the reddish color mostly on the back; the Gray-cheeked T. (*T. aliciæ*), of n. N. Amer., has the upper parts entirely olive, as also the Olive-backed T. (*T. ustulatus*), of all N. Amer., which differs in having an orbital ring and the sides of the head buffy; it has a w. variety that is russet above. The Varied T. (*T. naevius*), of the Pacific slope, occasional in the east, has a pectoral band, not spots. The Mocking Thrushes, lately placed among *Troglodytidae*, include, besides the Brown T. or Thrasher (q. v.) (and its s. w. var., the Long-billed T.), an extreme s. w. species—the Curved-billed T.; also the Crissal T., of Colo. and s., and the Sickie-billed T. or California Mocking-bird—the last two with breast unspotted.—A common W. Indian species (*T.* or *M. leucogenys*) is familiarly known by the name Hopping Diek, and is a general favorite from its bold, lively manners, and its sweet song.

THRUSH, n. *thrūsh* [Dan. *tröske*, thrush on the tongue]: a disease in the feet of horses and some other animals, of an inflammatory and suppurating kind: a disease of infancy: Aphthæ (q. v.).—*Thrush*, known also as *Infantile Sore Mouth*, is essentially a disease of early infancy, though it may occur at any age. Its characteristic symptom is the presence of small roundish white specks or patches on the lining membrane of the cavity of the mouth and throat, on the surface of the tongue, the angles of the lips, etc. These patches, termed *aphthæ*, appear like minute drops of tallow or fragments of curd, and are formed by elevated portions of epithelium covering a drop of serous fluid; and as the dead epithelium falls off, a raw surface, or a dirty ash-colored spot, is left exposed. In T., crops of these little patches commonly succeed one another. These spots render the mouth hot and tender, in consequence of which the act of sucking is difficult and painful. In association with these local symptoms are indications of general constitutional disturbance, such as feverishness, drowsiness, sickness, flatulence, colicky pains, diarrhœa, etc. The stools are green and slimy, and frequently acrid, as may be inferred from redness of the anus being a common symptom. The vomited matters also are green, and have a strongly acid smell, as has the breath also. The malady sometimes seems to be the result of improper diet, if the child is being brought up by hand; or of unwholesome milk from a diseased or intemperate nurse; or bad ventilation, etc.; but in some cases the cause is not evident. The disorder usually lasts eight or ten days, and is attended with danger only when the local affection runs into a low form of gangrenous ulceration. As undue acidity of the stomach seems an almost general symptom, the diet should be carefully regulated, and mild *antacids* prescribed. As a local application

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to the patches, honey and borax may be applied with a camel-hair pencil; or a pinch of a mixture of powdered borax and loaf-sugar (1 to 8 or 10) may be placed occasionally on the tongue, and the infant allowed to spread it over the mouth.

In the horse, thrush or trush consists in inflammation and ulceration of the sensitive surfaces within the frog, giving rise to a fetid discharge, constituting unsoundness, and usually causing lameness. Lack of cleanliness is the chief cause. Daily, when the horse returns to his stable, the foot should be washed out with soap and water, carefully dried, and the fissures filled with mineral tar. If amendment does not speedily ensue, a dressing of calomel should be substituted for the tar several times a week. Ragged or loose portions of the frog may be removed by the knife or scissors.

THRUST, n. *thrŭst* [Icel. *thrysta*, to press, to thrust: comp. L. *trūdĕrĕ*, to thrust]: a violent and sudden push; a sudden push or drive, as with a pointed weapon, or with the foot; in *arch.*, outward pressure of an arch against its abutments, or of rafters, beams, etc., against the walls: V. to push or drive with force; to drive or force, as a thing into a body, or between bodies; to stab; to squeeze in; to attack by a thrust; to enter by pushing or squeezing in; to push forward. **THRUST'ING**, imp.: N. the act of pushing with force or squeezing in. **THRUST'ED**, pp., or **THRUST**, pp. *thrŭst*. **THRUST'INGS**, n. plu. *-ingz*, that which is last pressed out of the curd by the hand; also spelled **THRUTCH'INGS**, *thrŭch'ingz*. **HOME THRUST**, an unexpected rebuke administered to a person, drawn from his own statements, arguments, or conduct.—**SYN.** of 'thrust, v.': to push; drive; assault; shove; attack; assail; propel; stab; compress; impel; urge; obtrude; intrude.

THRUST, n. *thrŭst*: OE. for **THIRST**.

THRUSTLE, n. *thrŭs'l*: the thrush or throstle.

THUCYDIDES, *thŭ-sid'ĭ-dĕz*: great historian of the Peloponnesian war, and ranked as the greatest historian of antiquity: prob. about B.C. 471–396(?); born in the demus Halimus, and said to have been the son of Olorus and Hegesipyle, and connected with the family of Cimon. It is stated—on authority equally conjectural, however—that he was instructed in oratory by Antiphon, and in philosophy by Anaxagoras. Certain it is that, Athenian as he was, of good family, and resident in the most cultivated community in Greece, he had a most liberal education. He was further possessed, either by inheritance or by acquisition through marriage, of gold-mines in that part of Thrace opposite the island of Thasos. He had two residences, one at Athens, one in Thrace. He left a son, Timotheus, perhaps also a daughter, who is said by some scholars to have written the eighth book of his history. We know from himself that he was one of the few sufferers who recovered from the terrible plague at Athens. We have no direct evidence as to his having exercised in public the oratorical talent which he reveals in

his history; but it is certain that he held military command, and that he commanded an Athenian squadron of seven ships at Thasos, B.C. 424, when Eucles, who commanded in Amphipolis, solicited his assistance against Brasidas. The expected arrival of a superior force induced Brasidas to offer Amphipolis favorable terms, which were accepted. T. arrived on the evening of the same day on which Amphipolis had surrendered; and though he prevented Elon, at the mouth of the Strymon, from falling into the enemy's hands, still his failure to save Amphipolis caused him to be sent into exile, probably to avoid the severer punishment which his enemy Cleon, then popular with the Athenians, was designing for him. Where his exile was spent is not known. Probably he lived long in the Peloponnesus; perhaps also in Sicily, as has been inferred from his minute descriptions of Syracuse and its neighborhood. According to his own account, he lived in exile 20 years, and probably returned to Athens about the time when Thrasybulus liberated it, in the beginning of B.C. 403. Ancient authorities all agree that his death was by violence (by robbers, according to some), though whether it occurred at Athens or in Thrace is unknown. The time when he wrote his history is uncertain. He is supposed, from hints supplied by himself, to have kept a register of the events of the war, from its outbreak to its close. His great work, chronologically divided into winters and summers—each summer and winter making a year—was subsequently rearranged, probably by Alexandrine critics, into the books and chapters as we now have it; and of these books the eighth (and last) is supposed either to have not been written by him, or to have not received the careful revision which he gave to the previous seven. There is hardly a literary production of which posterity has entertained a more uniformly favorable estimate than the history of T.—a high distinction due to his undeviating fidelity and impartiality as a narrator; to the masterly brevity of his style, in which he is content to give in a few simple yet vivid expressions the facts which must have often required his labor for weeks or months to collect, sift, and decide upon; to the sagacity of his political and moral observations, in which he shows the keenest insight into the springs of human action, and the mental nature of man; and to the unrivalled descriptive power exemplified in his account of the plague of Athens, and of the Athenian expedition to Sicily. Often, indeed, does the modern student of Greek history share the wish of Grote, that the great writer had been a little more communicative on collateral topics, and that some of his sentences had been expanded into paragraphs, and some of his paragraphs into chapters. But this want cannot have been felt by the contemporaries of T., while the fate of other ancient historians warns us that had his work, like theirs, been looser in texture, or less severely perfect, it would not have survived, as it has done, the wearing influence of time, or remained, in its own language, the *ktēma es aei*—the 'possession for ever'—which it has proved to be to the world. The best editions are those of Poppo (11 vols. Lps,

1821–40), of Krüger (2 vols. Berl. 1846–7), and—at least for historical illustration—of Arnold (3 vols. Oxford 1830–35). The best Eng. transl. is by Richard Crawley (1874); that of the Rev. Thomas Dale also is good.

THUD, n. *thūd* [AS. *thoden*, noise, din: L. *tundērē*, to pound]: a stroke or blow causing a dull sound, or the sound itself; a heavy blow.

THUG, n. *thūg* [Hind. *thug*, a deceiver, a robber]: formerly, in *India*, one of an association or confraternity of professional robbers and murderers professedly in honor of Kālī, wife of S'iva (see below). THUG'GEE, n. *-gē*, or THUG'GERY, n. *-gēr-ī*, or THUG GEEISM, n. *-gē-izm*, or THUG'GISM, n. *-gizm*, systematic robbery and assassination such as were practiced by the Thugs.—*Thugs* is the name by which this fraternity is generally known among Europeans in more n. parts of India. In provinces southward, they are called by various other names. In s. India, they lived formerly under protection of the native chieftains, who, for a consideration, connived at their practices, which, to the uninitiated, were generally concealed under the guise of an honest industry, especially that of the culture of land.

The proceedings of the Thugs were generally these: Banding together in gangs of 10 to 50, but sometimes of a much greater number, they assumed the appearance of ordinary traders, travelling, if enabled to do so by their wealth, on horseback, with the comforts of opulent merchants; but otherwise in more humble characters. Each gang had its *Jemadar*, or leader; its *Guru*, or teacher; its *Sothas*, or entrappers; its *Bhuttotes*, or stranglers; and its *Lughaees*, or grave-diggers. Arriving at towns or villages, they pretended to meet by accident, without previous acquaintance. Some of the gang then acted as emissaries to collect information; and they endeavored to insinuate themselves into the confidence and society of persons of property on a journey; or they followed the travellers, waiting for opportunity for their murderous work. The murder was perpetrated usually by throwing round the neck of the victim a rope or cloth, and when he had been cast to the ground, the fatal injury was inflicted. Three Thugs were generally required for the murder of one man; two, at least, were thought necessary; and to strangle a man single-handed was a feat of honorable distinction among them—ennobling him who accomplished it, and even his family, for many generations. After the murder the body was usually concealed, being buried where it would not be found; thus it could happen that entire parties of travellers were destroyed, and not a vestige of them was discoverable.

The practice of Thugs was not restricted to the land: the rivers of India also were infested by bands of these murderers on boats.—The slaughter, generally indiscriminate, was to a certain extent restrained by superstition; thus, it was deemed unlucky to kill certain classes and castes; and, as a rule, the female sex was exempt altogether.

The plunder was divided in various ways: according to

one account, a portion of it was usually appropriated for the expenses of religious ceremonies; and sometimes a part for the widows and families of deceased members of the gang: the residue was distributed among the gang.

The patron goddess of the Thugs was Devî or Kâlî, wife of the god S'iva, and the deity of destruction: in her name they exercised their profession, and to her they ascribed its origin. Formerly, according to their belief, Kâlî assisted them in disposing of the bodies of the victims by devcuring them; and afterward presented her worshippers with one of her teeth for a pickaxe, to be used in digging graves. By all the Thugs the pickaxe was an instrument held in the highest estimation: it was consecrated to its uses under many and minutely regulated ceremonies; and it was submitted to special purifications after each time of use in the preparation of a grave. The pickaxe was the symbol of the Thug's faith, and the chief object of his numerous superstitions. All his movements were regulated by these superstitions, chief among which was his belief in omens. The Thugs, after every murder, performed a special solemnity with prayer, in honor of the terrific Kâlî. The superstitions of the Thugs were of Hindu origin; but they were largely adopted by Mohammedans also, who, while stout adherents to the tenets of the Koran, yet paid divine honors to the Hindu goddess of destruction. This inconsistency they sometimes reconcile by identifying Kâlî with Fatima, the daughter of Mohammed, and wife of Ali, and by saying that Fatima invented the use of the noose to strangle the great demon Rukutbeejdana.

At various periods, steps had been taken by the native and Eng. governments to suppress Thuggee, but in 1831 energetic measures were adopted by the Brit. authorities; and the evil has now practically disappeared.—See *Illustrations of the History and Practices of the Thugs* (by E. Thornton, Lond. 1837); and Col. Meadows Taylor's *Confessions of a Thug* (1840).

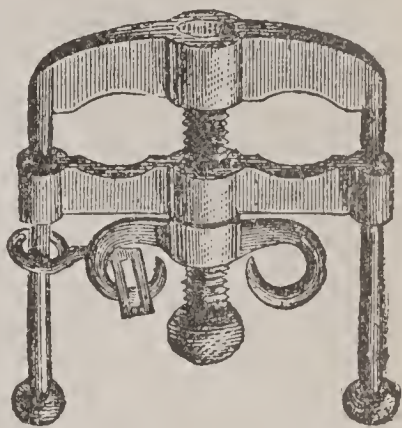
THUITES, n. *thū-ī'tēz* [Gr. *thuia*, a tree producing an aromatic gum—from *thuein*, to burn incense or perfumes]: in *geol.*, a genus of coniferous plants occurring in fragments in the shale and coal of the oolite, their imbricated stems and terminal twigs resembling those of the modern *Thuja* or *Arbor vitæ*. THU'JA, n. *-jă*, in *bot.*, a genus of evergreen trees, thickly branched, having scale-like, closely imbricated, or compressed leaves; also written THU'YA, n. *-yă*: see ARBOR VITÆ.

THULE, n. *thū'lē* [L. *Thūlē*]: in *early anc. hist.*, the northernmost part of the habitable world, supposed to have been Norway or Iceland, or more probably, as Ptolemy thinks, Mainland (the principal island) of the Shetland group. According to Pliny, it was an island in the northern ocean, discovered by the navigator Pytheas (probably a contemporary of Alexander the Great), who reached it after six days' sail from the Orcades, or Orkney Isles. The name T. appears to be merely a classic form of the Gothic *Tiel* or *Tiule*, 'remotest land' (comp. Gr. *telos*, a goal), and most modern geographers identify T.

THUMB—THUN.

with Iceland. Some, however, prefer to seek for it in that part of Norway called *Thile* or *Thilemark*, or in Jutland, whose extremity is known as *Thy* or *Thyland*. **ULTIMA THU'LE**, *ül tí-má* [L.]: farthest Thule; the extreme of anything.

THUMB, n. *thŭm* [Sw. *tumme*; Dut. *duim*; Ger. *daumen*, a thumb]: the short thick finger of the hand next to the first or index finger, and capable of being opposed to each and all of the other digits: V. to handle awkwardly; to play or soil with the thumb or fingers; to finger. **THUMB'ING**, imp. **THUMBED**, pp. *thŭmd*: **ADJ.** having thumbs. **THUMBKIN**, n. *thŭm'kn*, or **THUMB-SCREW**, an instr. of torture for compressing or squeezing the thumbs, much used in Scotland during the tyrannical times of the 17th c., and by the Spanish Inquisition. The last instance of its application in Britain was about 1682, in the case of Principal Carstairs (q.v.), on whom this mode of torture was inflicted for an hour and a half at Holyrood by the Scottish privy council, with the view of obtaining from him confession of the secrets of the Argyll and Monmouth parties, but without effect in producing any disclosures. **THUMB-IKIN**, same as **THUMBKIN**. **THUMB-STALL**, a kind of thimble or sheath of iron, horn, or leather, for protecting the thumb in sail-making and other work. **UNDER ONE'S THUMB**, under one's influence; completely in one's power. **BY RULE OF THUMB**, in a rude unskilful manner, not by education or imparted skill.



Thumb-screw.—From an instrument in the Antiquarian Museum, Edinburgh.

THUMMIM, n. *thŭm'mim* [Heb.]: *literally*, 'perfections'—an appendage to the breastplate of the anc. Jewish high priest: always used in the compound, Urim and Thummim, but what they were has never been satisfactorily ascertained.

THUMP, n. *thŭmp* [imitative of the sound of a blow: Iccl. and Sw. *dumpa*, to thump: Dan. *dump*, sound of a heavy fall: W. *tompian*, to thump, to stamp]: a heavy blow with something hard and thick, as with the fist, or the sound made by such a blow: V. to strike with something thick or heavy, as with a club, or the fist; to strike or fall with a dull heavy blow. **THUMP'ING**, imp.: **ADJ.** unusually heavy or large. **THUMPED**, pp. *thŭmpt*. **THUMP'ER**, n. *-ér*, one who or that which thumps; *familiarly*, anything large or great; a whopper; a barefaced lie.

THUN, *tón*: picturesque and ancient town of Switzerland, in the canton of Bern, 17 m. s.e. of the city of Bern. It stands on the Aar, one mile from the Lake of Thun, out of which the river rushes past the town in a stream of crystal clearness. The old castle of the 12th c. with its corner towers, and the venerable church, are the chief

THUN-THURGAU.

buildings. T. is the starting-place for those who visit the Bernese Oberland, and is consequently visited by crowds every season. Pop. (1880) 5,124.

THUN, LAKE OF: in the canton of Bern, Switzerland, between the town of Interlaken on the e., and that of Thun on the n.w.; 12 m. long, 2 m. broad, about 1,800 ft. above sea-level, and in some places between 600 and 700 ft. deep. The scenery is very attractive. Steamers ply on the lake, and there is a good post-road along the s. shore.

THUNDER, n. *thŭn'dér* [Ger. *donner*; F. *tonnerre*; L. *tonitru*, thunder; Ice. *duna*, to bellow; Dan. *dunder*, a rumbling sound; L. *tonāre*, to thunder]: the deep and loud rumbling sound heard after a flash of lightning; the report or noise caused by a discharge of atmospheric electricity (see **LIGHTNING**): any very loud noise; an alarming threat or denunciation: V. to emit the loud rumbling sound which follows the discharge of atmospheric electricity; to make a loud heavy noise, especially with some continuance; to emit with noise; to publish or utter loud denunciations or threats. **THUN'DERING**, imp.: ADJ. making a loud noise, especially with some continuance; uttering a loud sound: N. the report following an atmospheric discharge of electricity. **THUN'DERED**, pp. *-dèrd*. **THUN'DERER**, n. *-dèr-ér*, one who thunders; a power that thunders or acts irresistibly; a name applied by the ancients to Jupiter. **THUN'DEROUS**, a. *-ér-ŭs*, thunder-like; loud-sounding; rumbling; in *OE.*, producing thunder. **THUNDER-BLAST** or **-CLAP**, a sudden burst or peal of thunder. **THUNDERBOLT** a shaft of lightning; a familiar name for belemnites; one who acts suddenly and with resistless force or fury; anything sudden and startling, as intelligence; a dreadful threat or denunciation: in *her.*, a bearing borrowed from classical mythology, consisting of a twisted bar in pale inflamed at each end, surmounting two jagged darts in saltire between two wings displayed with streams of fire. **THUNDER-CLOUD**, a dark cloud which produces lightning and thunder. **THUNDERHEAD**, n. *thŭn'dér-hèd*, a great mass of rounded cloud, often called a wool-pack, frequently seen floating in the atmosphere in the summer. **THUNDER-SHOWER**, sudden and heavy rain during thunder. **THUNDER-STONE**, a variety of crystalline iron pyrites; a belemnite. **THUNDER-STORM**, storm accompanied by thunder and lightning (see **STORMS: LIGHTNING**). **THUNDER-STRUCK**, a. struck by lightning; greatly astonished; struck dumb by something startling and surprising.

THURGAU, *tŭr'gow* (i.e., valley of the Thur), or **THURGOVIA**, *thér-gō'vī-a*: frontier canton in n.e. Switzerland, bounded n.e. by the Lake of Constance, and w. and s. by the cantons of Zürich and St. Gall: 381 sq. m. The surface, unlike that of the other cantons of the country, is undulating or hilly, but not mountainous, the chief height being the Hörnli in the extreme s., 3,690 ft. The principal river is the Thur, from which the canton has its name, and which, flowing w.n.w. through a broad valley, joins the Rhine in the canton of Zürich. The soil is fertile in the ordinary crops, and remarkably so in fruits—large

THURIBLE—THURLES.

tracts of open country being laid out in orchards, as well as vineyards. Three-fourths of the inhabitants are Protestants. Cap. Fraunfeld. Pop. of T. (1894) est. 108,480.

THURIBLE, n. *thū'rĭ-bl* [L. *thurib'ūlum*, a censer to burn incense in—from *thūs*, frankincense; *thūris*, of frankincense]: a Censer (q.v.).

THURIFEROUS, a. *thū-rĭf'ēr-ūs* [L. *thūs*, frankincense, *thūris*, of frankincense; *fērō*, I bear]: producing or bearing frankincense. **THURIFER**, n. *thū'ri-fēr*, one who carries the thurible; the attendant in the Rom. Cath. Church, at solemn mass, vespers, and other solemn ceremonies, whose duty it is to carry the *thurible*, or incense-vessel, and either to minister Incense (q.v.) himself or to present the thurible to be used for that purpose by the officiating priest. The office of thurifer is one of those belonging to the Minor Order of *Acolyte* (see ORDERS). **THURIFICATION**, n. *thū'rĭ-jĭ-kā'shŭn* [L. *faciō*, I make]: the act of fuming with or burning incense. **THURIFY**, v. *-fĭ*, to cense.

THÜRINGER-WALD, *tü'rĭng-ēr-vált* (Forest of Thuringia): a considerable mountain range of central Germany, extending s.e. from the junction of the rivers Werra and Horsa, near Eisenach (q.v.), to n. Bavaria, where it joins the Frankenwald, a ramification of the Fichtelgebirge; total length, about 50 m. Its highest summits (Gross-Beerberg, Schneekopf, Inselsberg, and Finsterberg) range from nearly 3,000 ft. to about 3,200 ft. The mountains are mostly of granite, porphyry, and argillaceous schists, abounding in metallic veins, among which iron ore is most conspicuous, though many others are found; and auriferous sands occur in some of the rivers which have their source here. The T. is parcelled among the states of Weimar, Meiningen, Coburg-Gotha, Prussia, Schwarzburg, Reuss, and Altenburg.

THURINGIA, *thū-rĭn'jĭ-a* (Ger. *Thüringen*, *tü'rĭng-ĕn*): territorial name still borne by that part of Upper Saxony generally bounded by the Werra, the Saale, and the Harz Mts., though it has no longer any political significance. The country was so called from the people Thuringii (probably descendants of the Hermunduri), who were found inhabiting it in the 5th century. See SAXE-ALTENBURG: SAXE-COBURG-GOTHA: SAXE-MEININGEN: SAXE-WEIMAR-EISENACH.

THURL, n. *thĕrl* [AS. *thyrel*, a hole, an aperture (see THIRL 1)]: a short communication between adits in mines; a long adit in a coal-pit.

THURLES, *thĕrlz*: market town in the county of Tipperary, province of Munster, Ireland; on the river Suir, 86 m. s.w. from Dublin, with which city, as well as with Cork, it is connected by railway. It is a place of great antiquity, and is celebrated not only in the bardic history, but also as the scene of a great battle with the Danes. T. is the seat of the Rom. Cath. abp., has two convents of nuns, a monastery of Christian Brothers, and a college for ecclesiastical and general education, numerous attended.—Pop. (1851) 4,856, mostly Rom. Catholics; (1891) 4,511.

THURLOW.

THURLOW, *thér' lō* (EDWARD THURLOW), Lord: English lawyer: 1732–1806, Sep. 12; b. at Little Bracon-Ash, Norfolk. His father, a clergyman, sent him to school at Canterbury, where he obtained a sound knowledge of the Latin and Greek classics. Thence he proceeded to Cambridge 1748; but, for a breach of discipline, was compelled to leave the university 1751 without a degree. He became a student of the Inner Temple, and was called to the bar 1754. He was a fellow-pupil, in a solicitor's office, with the poet Cowper, and still affected idleness, though, in reality, he worked hard to make himself a good lawyer. His lofty stature, strongly marked features, dark eyes, bushy eyebrows, and look of self-possession and wisdom caused him to be credited with qualifications which he did not possess. He had powers, however, and they brought him early success at the bar. An accidental meeting, at a coffee-house, with the Scotch solicitors in the great Douglas case, led to his employment in it as junior counsel, and to his acquaintance with the members of the Douglas family. It was one of them, the Duchess of Queensberry, who, by her influence with Lord Bute, obtained for T. 1761 the rank of king's counsel. Afterward his reputation was heightened by his speech in the Douglas case—the greatest effort of his life. In 1768 he was returned for Tamworth, and became a zealous supporter of Lord North. When, in 1771, he was appointed solicitor-gen., he attracted the special notice of George III. by his zeal in supporting the policy of the government toward the Amer. colonies. In 1778 he was raised to the woolsack; and such was his influence with the king, that he was allowed, contrary to all precedent, to retain the office under the Rockingham administration, causing great embarrassment by opposing all the measures brought in by that government. Under the coalition ministry, he was compelled to retire; but he was restored as chancellor when Pitt came to power. For a time he supported the govt.; but relying again on the support of the king, he once more began to give trouble, and ventured to oppose the measures that his colleagues brought forward. Pitt then intimated that either he or T. must retire; and the king, without hesitation, consented to his removal (1792), and T. passed into comparative obscurity. He died at Brighton.—T. had legal learning, fluency, and self-confidence, with a caustic and often profane wit. Doubtless he was rated too highly by his contemporaries; yet Johnson would not have said of an ordinary person as he did of him: 'I would prepare myself for no man in England but Lord Thurlow. When I am to meet him, I should wish to know a day before.'

THURMAN—THURSTON.

THURMAN, *thér'man*, ALLEN GRANBERY: 1813, Nov. 13—1885, Dec. 12: b. Lynchburg, Va. He settled with his parents in Chillicothe, O., 1819: after 1853 he resided in Columbus, O. He was employed by a land-surveyor at the age of 18 yrs., and at 21 was private sec. to the gov. of O.; was admitted to the bar 1835; was elected member of congress 1845; declined a renomination; was chosen judge of the state supreme court 1851, retiring 1856. In the canvass for the governorship (1867) he was defeated by Rutherford B. Hayes, but became U. S. senator 1869, Mar. 4, and was his own successor 1874–81. In the senate T. was the leader of the democratic party, and won the respect of his political opponents. He was the democratic candidate for the vice-presidency 1888, but was not elected. In the senate T. was author of the act to enforce compliance on the part of the Pacific r.r. companies with the terms of their obligations to the federal govt.—the 'Thurman Act.'

THURSBY, *thérz'bǐ*, EMMA CECILIA: cantatrice: b. Brooklyn, N. Y., 1857, Feb. 21. Her first masters in singing were Julius Meyer, Achille Errani, and Erminia Rudersdorff. She visited Italy 1873 and there studied under Lamperti and San Giovanni. On her return she sang in the choir of the Broadway Tabernacle, New York. She has made tours of the United States and Europe, singing in concerts and oratorios, never in opera. Her chosen field is sacred music, and in the soprano parts of the oratorios of Haydn and Handel Miss T. is unexcelled.

THURSDAY, n. *thérz'dā* [AS. *thunres-dæg*, the Thunderer's day: Dan. and Sw. *torsdag*; Icel. *thorsdagr*, Thor's day, after the Scand. *Thor*, the god of thunder]: the fifth day of the week.

THURSO, *thér'sō*: burgh of barony, seaport, and market-town on the n. coast of Caithness, Scotland, 21 m. n.w. of Wick. It is irregularly built, but has two handsome churches. T. Castle, e. of the town, is a fine venerable structure. The harbor is safe for small vessels. Pop. (1881) 4,055. (1891) 3,936.

THURSTON, *thér'ston*, ROBERT HENRY: mechanical engineer: b. Providence, R. I., 1839, Oct. 25. He acquired practical knowledge of mechanical engineering in the work shop, and then took a scientific course in Brown Univ. He entered the navy as third asst. engineer 1861, and during the war served on different vessels in the n. and s. Atlantic squadrons; was asst. prof. of nat. and experimental philosophy in the Annapolis Naval School 1865–70; resigned from the navy 1872, and then was prof. of mechanical engineering in Stevens Institute, Hoboken, N. J., till 1885, when he was appointed director of Sibley College in Cornell Univ. T. has served on many important govt. commissions, and has been pres. of the Amer. Institute of Mechanical Engineers. He is inventor of a magnesian lamp, automatic recording testing-machine, and many other devices. He is author of nearly 300 essays and papers on technological subjects and has written several volumes, among them a *History of the Steam-engine*.

THUS—THYLACINE.

THUS, ad. *thūs* [AS. *thus*; Dut. *dus*, thus]: in this way or on this wise, referring to something present or under consideration, or to something just said, done, or referred to, or to something now to be indicated; to this degree or extent; so; consequently.

THUS, n. *thūs* [L. *thūs*, frankincense]: the resin of the Norway or spruce fir, the *Abiēs excel'sa*, ord. *Conif'ēræ*.

THUYA: see **THUJA**, under **TRUITES**.

THWACK, n. *thwāk* [imitative of the sound of blows: Icel. *thykkir*, a thwack]: a smart blow with something blunt and heavy, as with a stick: V. to strike with something blunt and heavy; to beat or thump; to thrash. **THWACK'ING**, imp. **THWACKED**, pp. *thwākt*.

THWART, a. *thwawrt* [Icel. *thvera*, to slant: Icel. *thverr*; AS. *thweorh*; Ger. *zwerch*, cross, awry: Dut. *dwaars*, cross]: lying across or crosswise; transverse: in *OE.*, perverse; inconvenient: V. to lie or come across the direction of; to cross, as a purpose; to oppose; to frustrate or defeat: N. the seat or bench of a boat on which the rowers sit, placed athwart the boat: AD. in *OE.*, obliquely; transversely: PREP. across; athwart. **THWART'ING**, imp.: ADJ. opposing; crossing: N. the act of one who or that which thwarts: the act of crossing or opposing. **THWART'ED**, pp. **THWART'ER**, n. *-ēr*, one who thwarts. **THWART'ING-LY**, ad. *-ing-lī*. **THWART'LY**, ad. *-lī*, crosswise.—SYN. of 'thwart, v.': to oppose; contravene; resist; withstand.

THWING, **CHARLES FRANKLIN**, D.D.: educator and minister. 1853—; b. New Sharon, Me. He graduated at Harvard Coll. 1876, and at Andover Theol. Sem. 1879; was pastor of a Congl. church at Cambridge, Mass., 1878-86; Minneapolis, Minn., 1886-90: pres. Western Reserve Univ. since 1890. Received degree D.D. from Chicago Theol. Sem. 1888. He is assoc. editor of the *Bibliotheca Sacra*. Among his published works are: *American Colleges: their Students and Work* (1878); *The Reading of Books: its Pleasures, Profits, and Perils* (1883).

THY, pron. *thī* [a form of **THINE**]: of thee, or belonging to thee; possessive of the pronoun *thou*, used only in solemn or grave style, *your*, the second person plural, being used in ordinary speech. **THYSELF'**, reciprocal pron.—from *thy* and *self*.

THYINE-WOOD, n. *thī'in-wūd* [Gr. *thuia*, a tree producing an aromatic gum—from *thuein*, to burn incense]: a precious wood mentioned in Rev. xviii. 12, and supposed to be the wood formerly called *thuja*, known to the Romans by a name signifying *citron-wood*.

THYLACINE, n. *thī'lā-sīn* [Gr. *thulākos*, a pouch; *knōn*, a dog]: carnivorous marsupial animal of the genus *Thylacinus*; the dog-faced opossum or native tiger of Tasmania. The tail is long and tapering. Only one species is known (*T. cynocephalus* or *Harrisii*), native of mountainous parts of Tasmania, where it inhabits the wildest glens, but issues to prey on the sheep of the colonists, by whom it is commonly called the wolf, or tiger-wolf. It is of the size of a large dog, very active and fierce.

THYME—THYMOL.

THYME, n. *tīm* [F. *thym*—from L. *thymus*; Gr. *thymos*, thyme: It. *timo*]: a common aromatic herb of the genus *Thymus*, nat. order *Labiatae*; having a two-lipped calyx, and four diverging stamens. **COMMON T.** (*T. vulgaris*) is 6–10 inches high, with narrow, almost linear leaves, and whitish or reddish flowers, in separate whorls, six in a whorl: it is common on dry hills in s. Europe, and is cultivated in gardens, for its fragrance.—**WILD T.** (*T. Serpyllum*) has a procumbent stem with many branches, 2–3 ft. long, oval leaves and purplish flowers, arranged in whorls united in a head: it is abundant on hills and mountains in all parts of Europe and n. Asia, and cultivated in Amer. gardens more than the Common T., from which it differs in being less upright, bushy, and pale. It is less fragrant than Common T., but both species contain an aromatic essential oil. The flowering branches (*Herba Thymi* and *Herba Serpylli*) are used in medicine as a powerful stimulant, and those of Common T. are used also for flavoring in cookery.—The **LEMON T.**, or Lemon-scented T. of gardens, is regarded as a variety of *T. Serpyllum*. It is generally of still lower growth than the common garden Thyme.—The **Basil-T.** (*Calamintha Nepeta*) with round-ovate crenate leaves, is naturalized from Europe in Va. and southward.—No species of T. is indigenous in America. **THYMY**, a. *tīm'ī*, abounding with thyme; fragrant with thyme.

THYMELEACEÆ, *tī-mē-lē-ā'sē-ē*: natural order of exogenous plants, of which the Mezereon and Spurge Laurel (see **DAPHNE**) are familiar examples. This order consists chiefly of shrubs, with a few herbaceous plants, and contains about 300 species, natives chiefly of warmer temperate countries. The leaves are undivided. The perianth is inferior, tubular, colored, 4-cleft, or rarely 5-cleft, sometimes with scales in the orifice. The stamens are perigynous, often eight, sometimes four, less frequently two. The ovary is one-celled, and the fruit one-seeded, either nut-like or a drupe. The bark is generally fibrous and tough. That of *Gnidia daphnoides* is used in Madagascar for ropes, and that of *Lagetta lintearia*, or Lace-bark, in the W. Indies for whips. The bark of some species of *Daphne* and nearly allied genera is made into paper in the East: see **DAPHNE**. Poisonous properties prevail in the order. The bark is in general very caustic, and that of some species is used as a vesicatory, and for other medicinal purposes.

THYMIC, a. *thī'mīk*: of or pertaining to the thymus gland. **THYMIC ASTHMA**: see **THYMUS**.

THYMOL, n. *tīm'ōl* [see **THYME**]: a chemical constituent of the oil of thyme.

THYMUS.

THYMUS, n. *thī'mūs* [Gr. *thumos*, thymic, a fleshy excrescence on the skin, so called from its likeness to a bunch of thyme-flower]: temporary gland existing at the lower part of the neck in children, and in the young of various animals: called also Thymus gland. It is one of those structures which, like the spleen, suprarenal capsules, and thyroid gland, are classed with the ductless glands. It is a temporary organ, whose greatest development and functional activity in relation to the rest of the body are manifested (according to Dr. Carpenter) in the human infant soon after birth—this rapid growth, however, soon subsiding into a growth which merely keeps its proportion to the rest of the body; but its increase is continued till the age of puberty. After several years it gradually assumes, in well-nourished persons, the characters of a mass of fat. When its growth is most active, the T. gland is found to consist of two lateral lobes in contact along the middle line, extending from the lower border of the thyroid gland to the cartilage of the fourth rib, and covered by the sternum and by the margins of the muscles passing upward from the top of that bone. It is of pinkish gray color, soft and lobulated on its surfaces; and has been shown to consist of an assemblage of hollow glandular lobules, united by connective tissue, all their cavities communicating with a central reservoir or main canal without outlet. The thymus is about two inches in length, one and a half in breadth, and four lines thick, and at birth it weighs about half an ounce; its chemical constituents are water, albumen, gelatine, sugar (?), fats, leucine, sarkine, xanthine, and formic, acetic, succinic, and lactic acids, besides the ordinary inorganic salts—the number of the ingredients, many of them rare elsewhere in the body, indicating that important chemical changes take place in their structure. Its exact uses are unknown; but like the other ductless or vascular glands, it doubtless has some important part in preparation and maintenance of the blood. The albuminous nature of the juice of this gland, and its finely granular appearance, indicate that a material is here being prepared which is to be rendered subservient to nutrition; and various facts noticed in regard to its changes of bulk (especially its rapid diminution in over-driven lambs, and its subsequent gradual redistention during rest, if plenty of food is given) strongly confirm these views.—See Sir Astley Cooper's monograph, *On the Anatomy of the Thymus Gland*, 1832; and Prof. Goodsir's Memoir, 'On the Development of the Thymus Gland,' *Philosophical Transactions*, 1844.

The only disease of this structure requiring notice is hypertrophy—which was supposed occasionally to induce suddenly fatal dyspnœa (breathlessness) in children. There are, however, sound reasons for believing that there is no essential connection between the glandular enlargement and the suffocative paroxysms; because (1) the affection *thymic asthma* may occur with an abnormally small thymus; (2) when a T., enlarged by malignant disease (encephaloid, e.g.), does occasion dyspnœa, it is not sud-

THYMUS.

den and paroxysmal, but constant. The disease is known under various other names, as *Laryngismus stridulus*, *spasmodic croup*, and *child-crowing*. This *bastard croup*, as Dr. Watson calls it, is far more common than true croup, and is very liable to be confounded with it. 'In their most obvious symptoms, the two affections are much like. The broad and essential difference between them is the absence in the spurious disorder of inflammation and of fever, and consequently of any concrete or other effusion from the mucous membrane of the air-passages. The child is seized all of a sudden, roused perhaps from its sleep, or checked in the act of sucking, by a catch, or interruption of its breathing, more or less complete. It strives and struggles to inspire, but is apparently unable to do so; at length, the effort is successful, and the breath is drawn in with a shrill whistling or crowing sound, like that which characterizes the inspirations of croup or of whooping-cough, and depending, no doubt, upon the same cause—a narrowing (in this complaint, temporary) of the fissure of the glottis.'—*Lectures on the Principles and Practice of Physic*, 4th ed. I, 866. In severe cases, the countenance becomes livid, the eyes fixed, and there is entire suspension of the respiratory function for a while. The child makes vehement struggles to recover its breath, and at varied intervals, from a few seconds to a minute or longer, air is admitted through the glottis, now partially open; and this rush of air produces the characteristic sound. A fit of coughing or crying then often supervenes, and the attack terminates with some exhaustion. If, however, the glottis does not partially open, the child will die suffocated (in popular language, *in a fit*) at the end of two, or at most, three minutes. In association with these symptoms is often a contracted state of the flexor muscles of the thumb, fingers, toes, wrist, and ankle, giving to the foot an appearance like that of club-foot. It has been observed that there is frequent connection between child-crowing and certain other affections, as (1) tumefaction of the glands in the neck and chest, and entanglement of the pneumogastric nerve or its branches among these glands; (2) painful dentition, which is apt to produce glandular swellings of the neck; (3) excoriations behind the ears, and inflamed and irritable scalp, which also occasion enlargement of the glands. The nerves passing from the enlarged gland to the nervous centre convey the sensation of irritation; and the inferior laryngeal nerve, which supplies nearly all the muscles of the larynx, acts on the efferent or motor nerve, and excites spasmodic contraction of the muscles closing the aperture of the glottis. Thus the phenomena are those of Reflex Action.

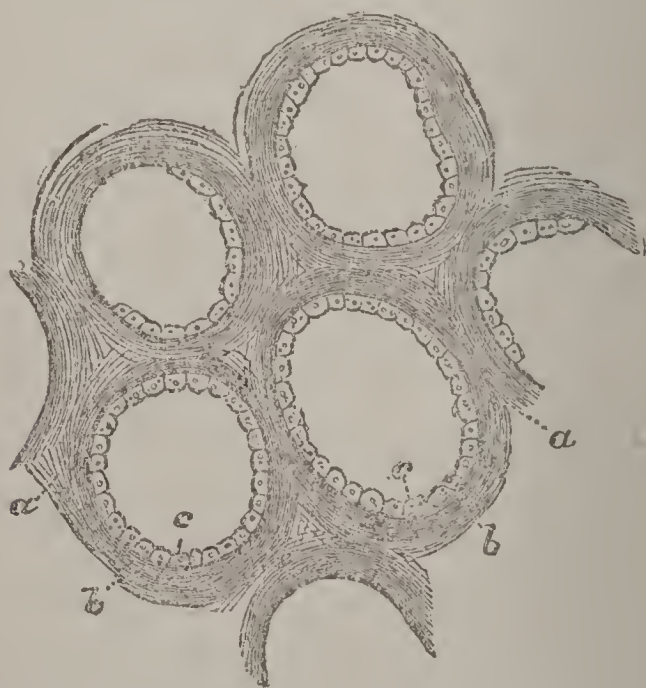
During the paroxysm, the warm bath may be tried, if it can be made ready at once; and the more accessible application of hot fomentations to the throat, by means of a large sponge, is often serviceable. The muscles sometimes relax when cold water is freely sprinkled over the chest and face, and these simultaneous applications of hot and cold water are not incompatible. Subsequent general treatment must depend on the exciting cause, on the pain-

THYRO--THYROID BODY.

ful dentition, the eruption of the head, etc. The state of the bowels and of the skin must always be carefully regulated, and change of air is always advisable. Phosphate of lime, in doses of five to ten grains, three times a day, administered in chalk mixture, has been recommended.

THYRO-, *thī'rō*, or **THYREO-**, *thī'rē-ō* [Gr. *thurēōs*, a shield]: a prefix in anatomical terms, implying connection with the thyroid cartilage. **THYROID**, a. *-royd* [Gr. *eīdōs*, resemblance]: in *anat.* shield-shaped, applied (1) to one of the cartilages of the larynx from its shield-like form; and (2) to a glandular body lying in front of this cartilage, or the arteries supplying the part (see **THYROID BODY**).

THYROID BODY, *thī royd*, or **THYROID GLAND**: one of the ductless or vascular glands, at the upper part of the trachea; consisting of two lateral lobes, one on each side of this canal, and connected by a narrow transverse portion at the lower third, called the isthmus. It is of brownish-red color; and its normal weight is about an ounce, but it occasionally becomes enormously enlarged, constituting the disease called bronchocele or Goitre (q.v.). Each lobe is somewhat conical, and is about two inches long, and three quarters of an inch broad. The T. B. differs from the other vascular glands in structure; for it consists of an aggregation of closed vesicles (*b, b*, in fig.),



Group of Gland-vesicles from the Thyroid Gland of a Child:
a, connective tissue; *b*, membrane of the vesicles; *c*, epithelial cells.
 which seem to be furnished with a true limiting membrane, therefore to be real gland vesicles embedded in a stroma (*aa*) of connective tissue, and not communicating with any common reservoir. These bodies vary in diameter in the human subject from $\frac{1}{2000}$ to $\frac{1}{85}$ of an inch: and they contain an albuminoid plasma, either faintly granular or of somewhat oily aspect, amid which are a number of corpuscles, the greater part in the condition of nuclei, while some have advanced to that of cells. The T. B. is abun-

THYRSUS—THYSELF.

dantly supplied with blood by the superior and inferior thyroid arteries, which continue subdividing, till they ultimately form a very minute capillary plexus on the limitary membrane of the vesicles. This body, like the thymus and suprarenal capsules, is relatively larger in the fetus and during infancy than in after-life.

From the investigations of Simon (see his Memoir on the 'Comparative Anatomy of the Thyroid,' *Philosophical Transactions*, 1844), it appears that a T. B. is present in all mammals, birds, reptiles, and amphibians, and in many fishes: its presence in some of the fishes in which Mr. Simon observed it has, however, been doubted.

A theory regarding the function of this gland, certainly ingenious, and probably correct, has been propounded by Simon: basing his theory on the fact that the thyroid arteries arise in close proximity to the cerebral, he considers that the T. B. acts as a diverticulum to the cerebral circulation, exercising at the same time its secreting function in an alternating manner with the brain.

THYRSUS, n. *thér'sŭs*, or THYRSE, n. *thèrs* [L. *thyrsus*; Gr. *thursos*, a stalk, a stem, a staff entwined with ivy and vine-shoots]: in *anc. Greece*, a wand (sometimes wreathed in ivy and vine-leaves) with a pine-cone at the top, carried by the devotees of Bacchus; in *bot.*, a species of inflorescence; a compact panicle, as in the lilac, like a bunch of grapes.

THYSANURA, or THYSANOURA, n. plu. *this'ă-nŭ'ră* [Gr. *thusanos*, a fringe; *oura*, a tail]: order of apterous or wingless insects of small size, and which undergo no metamorphoses. They are furnished with peculiar organs, either along their sides or at the extremity of the abdomen, which, as well as the legs, are used for locomotion. The common names are Spring-tails or Bristle-tails, and some of them, of fish-shape and satin lustre, occasionally found around kitchen-sinks, are called fish-worms. If the *Collembola*, including *Podura* (q.v.), are excluded, the order has the families *Japygidae*, *Campodidae*, and *Lepismatidae* (see LEPISMA). The *Lepismidae* have an elongated body, covered with small shining silvery scales. The abdomen is furnished on each side with a series of movable appendages; it has also at its extremity a compressed appendage of two pieces, and three jointed bristles, used in leaping. The *Lepismidae* inhabit dark and moist places; many of them often in the interior of houses. THYS'AN-ŪROUS, a. *-ă-nŭ'rŭs*, having fringed tails.

THYSELF: see under THY.

TI, *tē* (*Cordyline Ti*, formerly *Drācæna terminalis*): plant of nat. order *Liliaceæ*, nearly allied to the Dragon Tree: see DRAGON'S BLOOD. It is found in s.e. Asia, Eastern archipelago, Sandwich Islands, and many other island groups of the Pacific Ocean. It attains a height of 10 or 12 ft., sometimes more, with a tree-like form, lanceolate leaves of a reddish hue, and branching panicles. The fruit is a three-celled and three-seeded berry. The leaves afford food for cattle, and form durable thatch for houses. Their fibres are sometimes made into cloth. The plant is most valuable, however, for its root, which is very large, and when raw is hard, fibrous, and almost insipid; but becomes soft and sweet when baked: it is very nutritious, and much used as food. Good sugar is made by evaporating its juice; the fermented juice is used as an intoxicating beverage, and a kind of ardent spirit is distilled from it.

TIAHUANUCO, *tē-ā-wā-nō'ko*: detached elevation of the land (12,000 ft.) in Bolivia, on Lake Titicaca, about 40 m. n.w. of the city of La Paz. It appears to have been anciently an island, when the area of the lake was greater than it is now. On the summit are noteworthy tokens of former human occupation—beautifully carved blocks of stone of enormous size, in some cases clamped with bronze. Probably it was a place of religious assembly long anterior to the time of the Incas.

TIA'RA, PAPAL: the triple crown of the pope, considered symbolical of his temporal, as the keys are of his spiritual authority. It is composed of a high cap of gold cloth, encircled by three coronets, with a mound and cross of gold on the top. From the cap hang two pendants, embroidered and fringed at the ends, and semée of crosses of gold. The original papal crown consisted of the cap alone, and was used first by Pope Damasus II. 1048. The cap was surrounded with a high coronet by Boniface VIII. 1295; the second coronet was added 1335 by Benedict XII.; the third by John XXIII. 1411.



Tiara.

TIARA, n. *tī-ā'rā*, or in poetry TIAR, n. *tī'ār* [L. and Gr. *tīāra*, a turban: It. *tiara*: F. *tiare*]: the lofty turban or ornamental head-dress of the anc. Persians; the mitre of the anc. Jewish high-priest; the pope's triple crown (see below); a diadem. TIA'RAED, a. *-rād*, possessing or wearing a tiara.

TIBER—TIBERIUS.

TIBER, *tī'bér*: chief river of central Italy, and the most famous in the peninsula; rising from two springs in a wood of beech-trees in a dell of the Tuscan Apennines (province Arezzo), about six m. n. of the village of Pieve-San-Stefana, lat. about 43° 45' n. Its course to Perugia is s.s.e.; thence to Rome it flows s. in an irregular zigzag line; but when it enters the plain of the Campagna, it curves s.s.w., and enters the Mediterranean by two branches, which inclose the Isola Sacra. Total length about 212 m. The most notable towns on or near its banks are Perugia, Todi, Orvieto, Rome, and Ostia; and its chief affluents are the Nera (anc. *Nar*), and Teverone or Aniene (anc. *Anio*) from the left, and the Chiana from the right. In its upper course to Orvieto, it is rapid and turbid, and of difficult navigation. It is regularly navigable for boats of 50 tons to the confluence of the Nera, 100 m. from its mouth, and small steamers ascend to within 7 m. of that point. Wine, corn, charcoal, wood, and other produce from the interior are conveyed by the T. to Rome. Within the walls of Rome (q.v.), the width of the river is 300 ft., depth 12–18 ft. Of its two mouths, the n., the Fiumicino, is the channel of commerce; the s., the Fiumara, is useless for commercial purposes, owing to the accumulation of sand at its mouth. The T. is supplied mostly by turbid mountain torrents, whence its liability to sudden overflowings; even the oldest Roman myth, that of Romulus, being inseparably associated with an inundation. Its waters, too, are still discolored with yellow mud, as when Virgil described it—

Vorticibus rapidis et multa flavus arena.

TIBERIAS, LAKE OR SEA OF: see GENNESARET, SEA OF.

TIBERIUS, *tī-bē'rĭ-ŭs* (TIBERIUS CLAUDIUS NERO), second emperor of Rome: B.C. 42, Nov. 16—A.D. 37, Mar. 16 (reigned A.D. 14–37); b. on the Palatine Hill; son of Tiberius Claudius Nero, one of the active partizans of Pompey and Antony in the war of the second triumvirate, and of Livia, descendant of Appius Claudius Cæcus. The triumvir Octavianus Cæsar (afterward Emperor Augustus) having become enamored of Livia, the complaisant husband divorced her, and, though then pregnant with Drusus, she was immediately espoused by Octavianus B.C. 38. T., being now one of the imperial household, received a careful education; was allowed by Augustus the same public honors as those given to his nephew and grandsons; and, as well as his brother Drusus, was employed in active service at the head of the legions on the outposts of the empire. T. was at this time in favor with the emperor and the Roman people; and his praises as a military leader were loudly sounded, though the character of his opponents did not require from him very great warlike ability. At the command of Augustus, he unwillingly divorced his wife, Vipsania Agrippina, to marry the emperor's daughter Julia B.C. 11; but, disgusted at her open profligacy, he gladly accepted a command on the German frontier, and afterward (B.C. 6) retired to Rhodes, where he lived seven years, re-

turning after Julia's banishment to Pandataria. The death of two of Augustus's three grandsons paved the way for the adoption of T. and of the third grandson, Agrippa Postumus, by the emperor, and for the appointment of T. as heir to the throne; Agrippa being, apart from his youth, unfitted for the exercise of uncontrolled authority. Accordingly, T. ascended the throne A.D. 14; and, by his manly and graceful demeanor, prudence, and moderation, gave promise of a happy reign. His mild and benignant sway at first was doubtless due in part to the necessity of outbidding his popular nephew Germanicus (who was of Octavian blood by his mother's side) for public favor; but after his kinsman's death (A.D. 19), and the removal of all who were likely to put forth claims to the throne, T.'s character developed less favorable aspects. He had always been taciturn, reserved, gloomy, tenacious in purpose, jealous, and irresolute, though not cowardly, and almost devoid of sympathy and affection; and with the sceptre firmly in his grasp, the development of these qualities, with perhaps a clouding of his mind in his last ten years, produced a line of conduct which has by many writers been taken as indicating a monstrous wickedness and cruelty. During the life of his mother, however, T. at first left to her a large share in the government, and led a retired life: afterward he exercised a more active rule. The chief events of this part of his reign were the increase in number and amount of the taxes, the removal of all power from the people and the senate, and the institution of prosecutions for *laesa majestas*, the latter being only a convenient mode of removing all who incurred the displeasure of the emperor. After Livia's death A.D. 29, he resigned the whole real authority into the hands of Ælius Sejanus, Roman knight, and commander of the pretorian guards. His naturally suspicious and gloomy temper—doubtless embittered by the miserable state of his family life—was wrought upon by Sejanus, who was a man of great ability and resolution, and well knew how to maintain his ascendancy over the emperor by pouring into his ear tales of conspiracy, and then allaying the imperial fears, and satisfying his own private enmities by the condemnation for *laesa majestas* of eminent Roman citizens. Nevertheless, the government in general was well and wisely administered; the provinces never were under better rule; strict economy, light taxation, and public security were achieved. The sufferers from tyranny were the wealthy and eminent men of Rome. In A.D. 27 T. retired to the island of Capri, leaving Sejanus, whom he made his coadjutor in government and equal in position, at the head of affairs; and from this period till the discovery of the ambitious aspirations of Sejanus, and his downfall A.D. 31, the Roman annals are crowded with proscriptions at Rome, and infamous excesses at Capri. Sejanus's successor, Macro, had all his vices, and few or none of his talents; and so the state of affairs was even worse than before, the senate indorsing with accommodating promptitude every order, however tyrannical, of the emperor or his confidant.—T. died at Misenum.

TIBET.

TIBET, or THIBET, *tib'et* or *tî-bět'*, or TUBET, *tûb'et*. European name of a country in central Asia; bounded n. by Mongolia, e. by China, s. and w. by Hindustan (native name *Bod* or *Bodiyul*, the land of Bod); 600,000 to 800,000 sq. m. The n.e. part is scarcely known.—Pop. estimated 6,000,000.

Surface.—From an elevated tract at the w. extremity of T., where the Hindu-Kush and Pamir highlands meet, the mountain-system of the Kuenlun runs e., and the greater chain of the Himalaya s.e., inclosing in the angle between them the Tibetan table-land, which extends e. to the frontier of China. Although T. is described as a table-land by geographers, its surface is traversed by mountain-chains, which, near its w. and e. frontiers, interlace and ramify in a complicated manner. On the s. border, the height of the plateau through which the Sanpu runs, from a point near its source to H'lassa, was carefully ascertained by barometrical observations 1866. Along the great route from H'lassa to Gartok, in the basin of the Indus, for 800 m., the average elevation is 13,500 ft. Several stages of the journey along the route were above 16,000 ft.; only one sank to 11,000. N. and e. of this elevated tract, the plains of T. are supposed to descend; but accurate observations are lacking. The Himalaya, 20 summits of which are higher than the loftiest of the Andes, stand out from the plateau, and are connected with it only by ridges of lesser elevation. In general, the descent from T. on the s. is by three gradations, the first very abrupt. The mountain-roads by which T. is entered from India, pass through deep ravines cut by the streams in the mountains, and present the wildest and grandest scenes described by travellers.

The mountains which rise from the table-land divide T. into several natural regions. The Karakorum range, parallel to the Himalaya, forms with them a great valley, drained on the w. by the tributaries of the Indus, and on the e. by the Sanpu. To the whole basin of the Indus n. of the Himalaya, the name Little Tibet is sometimes given; but generally the upper basin is known as Ngari, the middle basin as Ladak (q.v.), or Middle Tibet; and the lower as Bultistan, or Lower Tibet. The countries drained by the Sanpu are described as T. proper, which is in turn divided into Dsang, the dist. of the Upper Sanpu, and Wei, surrounding H'lassa, the dist. of the Lower Sanpu. Further e., the tract drained by the tributaries of the Yangtze-kiang, in which are Lithang and Bathang, is known as Kham. N. of the basin of the Sanpu, lies another region, a great elevated desert, called Khor on the w., and Katchi on the e.; and at the n.e. extremity of T. is a hilly tract, in which the Hoang-ho takes its rise, and in the centre of which is Lake Ko-ko-nor. The provisional name given to the tract is the country of the Ko-ko-nor.

Geology.—The geology of T. is little known except on the s. and w. frontier. The highest part of the Himalaya consists of granites and crystalline strata, and in the neighborhood of Lake Manasarowar, of volcanic rocks. On the

TIBET.

table-land, the strata belong to the most recent Tertiary epoch (the Pleistocene). They lie horizontally as they were deposited, and seem to have been lifted up in one unbroken cake to their present prodigious elevation. T. is believed to abound with silver, copper, and tin, but the absence of fuel renders its mineral wealth unavailable. Gold is found in considerable quantities; and salt, sulphur, borax, and nitre abound.

Climate.—T. lies between the latitude of Naples and Cairo, and might be supposed to enjoy a similar climate. But its great elevation renders it excessively cold during the winter, when its climate resembles that of the arctic regions more than that of the zone to which it belongs. The mountains and the great plains between T. and the sea rob the winds of their moisture; hence another peculiarity of the climate is its excessive dryness. Timber never rots, but it breaks from brittleness; flesh exposed to the wind does not become putrid, but dries, and can be reduced to a powder. The air loses its conducting power; and persons dressed in sheepskins give out long electric sparks when they approach conducting substances. During winter, the winds are excessively high, and the weather-beaten rocks break into a dust, which mixes with the loose alluvial soil, and with it is blown about in blinding clouds. The limit of perpetual snow is from 16,000 to 18,000 ft. high on the Tibetan side of the Himalaya, while on the Indian or s. side it is in some places only 13,000—a fact attributed to the dryness and purity of the air above the table-land. The Tibetan glaciers, particularly in the mountain region of the w., are of enormous extent. Pastures and low bushes make their appearance at 18,544 ft. (2,800 ft. higher than Mont Blanc, and 1,279 ft. above the snow-line on the Andes near Quito). Below this level extends a country of bare and scanty pastures. Owing to the great dryness of the air, trees (the cedar and birch) are found in only a few scattered spots on the hills. In the great plains, the pursuits of the inhabitants are chiefly those of the pastoral tribes of the steppes of central Asia. In the valleys the soil is more productive; and fruit-trees, the vine, and the European grains are cultivated. The conditions of the climate render irrigation necessary, and the construction and maintenance of terraces along the slopes. This has given rise to a kind of agriculture characteristic of T., which demands skill and continuous labor, and which has called into existence an intelligent, strong, and hardy population. Among the productions of T. are barley, buckwheat, grapes, and all the European fruits.

Industry.—The Tibetans have made considerable progress in industrial arts. They are ingenious jewellers, and manufacture extensively fabrics of wool and goat's hair, Buddhist idols, etc. In spite of the inaccessible nature of the country, and the lack of good roads and bridges, the rivers being crossed by inflated skins, a great trade is carried on with the neighboring lowlands. That with China is conducted chiefly at Sinning, but partly at H'lassa, by caravans, the goods being conveyed on the backs of oxen,

mules, and horses. The raw produce of T. is exchanged for tea, or Chinese manufactures, and European cutlery. A great trade is carried on also with Nepaul and Bhotan, from which, in exchange for the produce of T., broad-cloths and Indian manufactures are imported. From Turkestan the trade is no less important.

Language and Religion.—The language of the Tibetans, spoken also in Nepaul, and by the inhabitants of Bhotan, belongs to the monosyllabic or Chinese class: see PHILOLOGY. Tibetan is singularly free from dialects, from which it is judged to have spread rapidly in recent times. It has a copious literature, chiefly religious. The religion of the Tibetans is a kind of Buddhism: see LAMA. At the extreme w., in Bultistan, Mohammedanism prevails, which, having spread from Cashmere and Persia, and not from Turkestan, is Shiite. Some practices common, it is believed, to the earlier races of men, are said to survive among the Tibetans: the most remarkable is Polyandry (q.v.), brothers being allowed to have one wife in common.

Government.—Almost the whole of T. proper is now tributary to China. The government is to some extent, however, in the hands of a Buddhist hierarchy, the name of the chief priest being the Dalai-lama, and the second the Bogdo-lama. These spirittual and temporal princes rule in different parts of the country. There are Chinese soldiers in all the chief towns, and several years ago their number was said to be more than 60,000. The Chinese generals have entire control of the army, and direction of the most important temporal affairs. Commerce is in the hands of the government, and is closely watched, there being Chinese garrisons at all the chief passes.

There are several important towns in Tibet, of which H'lassa (q.v.) is the chief.

History.—The early history of T. is legendary. The first king, B.C. 113, was said to have been exposed in a copper box, and afterward found swimming in the Ganges. As early as the beginning of the 5th c. after Christ, a Buddhist missionary from Cashmere is said to have obtained in T. a footing for the doctrines of Buddha. In 821 T. was compelled to pay tribute to China. Early in the 10th c., King Dharma adopted Mohammedanism; but he was killed 925, and Buddhism was re-established. In the beginning of the 11th c., T. was split into several states, and its power declined. In the 12th and 13th c., the Chinese began to conquer e. T., which, however, did not become tributary to Peking till 1720, when it was placed under its present government. W. Tibet has been exposed to the inroads of the Turkish tribes more than to those of the Chinese. The former were, however, expelled from it by Aurungzebe in the 17th c., and then it was that Mohammedanism was introduced. In the early part of the 19th c., w. Tibet was annexed to the Sikh empire of Runjeet Singh: it now forms part of the territory of the maharajah of Cashmere.

For a long period, T. was known in Europe only from the accounts of Marco Polo and of the Jesuit missionaries,

TIBIA—TIBULLUS.

travellers respectively of the 13th and 17th c. It was visited 1774 by George Bogle, and 1783 by Samuel Turner, both sent by Warren Hastings on missions to the Dalai-lama. In the 19th c. it has been partially explored by Manning (1812), Capt. (now Gen.) Strachey (1849), the French Jesuits Huc and Gabet, the brothers Schlagintweit (1855-57). A regular survey of Lower T. and Ladak was reported as completed by the Indian govt. 1866. Major Montgomerie, the officer in charge, conceived a plan of extending the survey to the neighboring districts of T., closed by the jealousy of the Chinese officials against Europeans. He had Hindus of education, or pundits, instructed specially to take scientific observations, and sent them, disguised as merchants, to explore T. beyond the Chinese frontier. The pundits travelled over and carefully surveyed the region n. of the Himalaya and between the frontier of Cashmere and H'lassa. They visited the great gold-fields of T., which were found to extend 1,000 m. s.e. of Ilchi, the mart from which the produce of the diggings is exported; and they furnished accurate and copious information about districts which no European has been allowed to enter. One of these pundits, a semi-Tibetan, dispatched 1871, succeeded in exploring 320 m. of unknown territory, discovering and marching round the great lake Tengri-nor in the n., which is 50 m. long. The journey of the pundit Nani Singh, 1874, 5, is one of the most important of the 19th c. in geographical results. Russian explorations of importance have been made in recent years under Col. Prjevalski and his successors. Passing from Leh to H'lassa, he traversed for the first time the vast lacustrine plateau of T., and thence made his way into Assam. Besides these explorations in w. T., attempts have been made to penetrate the s.e. corner of the table-land—See Col. Montgomerie's *Reports of Trans-Himalayan Explorations; Tibet in the Last Century*, by Clements Markham (1876); and Sir William Temple, *Proceedings of the Geog. Soc.*, 1882.

TIBIA, n. *tīb'ī-ă* [L. *tibia*, the shin-bone, a flute]: in *anat.*, the larger of the two bones of the lower leg, extending from the knee to the ankle, the other being the Fibula (q. v.); the shin-bone of man (see **LEG**, **THE**). **TIB'IAL**, a. *-ăl*, pertaining to or situated near the tibia.

TIBULLUS, *tī-bŭl'ŭs*, **ALBIUS**: Roman elegiac poet: about B.C. 54—abt. B.C. 19; of equestrian family (see **EQUESTRIAN ORDER**). We know nothing of his youth or education. From his equestrian ancestors he inherited an estate at Pedum, between Tibur and Præneste, which, like the estates of Virgil and Horace, had been either wholly or partially confiscated in the civil wars. T., however, recovered part of his property, and spent on it the most of his short life. He was patronized by Messala, whom, B.C. 31, he accompanied into Aquitania to suppress a serious revolt. He was present at the battle of Atax, which gave the final blow to the insurgents; and he celebrates in a fine poetic strain his part in the campaign. Next year, Messala was sent to the East, and again T. accompanied him; but having been obliged from illness to stop at Cœrcyra,

he returned to Rome (B.C. 29). At this point the public life of T. ceases; thenceforth he applied himself to the study and composition of poetry. His *Elegies*, divided into four books, are mainly addressed to his mistresses, Delia, Nemesis, and Glycera, whose inconstancy or coldness he bewails in tender and exquisitely finished verses. The third book, however, is now believed to be the work not of T., but of an inferior poet; also the hexameter poem on Messala, with which the fourth book opens, is, from internal evidence, supposed to be by an inferior hand. Only the first book was published during the poet's lifetime. The character of T. was gentle, amiable, and winning. During life, he had the honor of being addressed in an ode and an epistle by Horace; after death, of being bewailed in an elegy of matchless beauty by Ovid.

TIBUR: see TIVOLI.

TIC, n. *tik* [F. *tic*, a twitching]: a local and habitual convulsive motion of certain muscles, particularly of the face. TIC-DOULOUREUX, n. *tik-dû-lû-rô'* [F. *douloureux*, painful]: a painful affection of a nerve, coming on in sudden attacks, usually in the head or face; neuralgia in the face—also simply called Tic (see NEURALGIA).

TICHBORNE TRIAL, *tich'bérn*: notable English law case, called for trial 1871, May 12, and closed 1872, Mar. 6. Roger Charles Tichborne, b. 1829, Jan. 5, belonged to an ancient family, and was heir (after his father) to the title and estate of Sir Edward Tichborne, his uncle. He was educated in France and at the Jesuit college of Stonyhurst; held a commission in the army 1849-52, but then resigned and went to sea. He was certainly in Valparaíso 1853, June; then crossed the continent to Rio, whence he sailed for New York in the ship *Bella*, which was lost at sea. Roger was then presumed to have deceased. His father, who succeeded to the baronetcy 1853, died 1862. Roger's mother, Lady Tichborne, hoping that her son might still be alive, advertised for him in English and Australian newspapers 1865, and the following year her advertisement was answered by Thomas Castro, butcher, of Wagga Wagga, Australia, who declared himself to be her son, saved from the wreck of the *Bella*. On Lady Tichborne's invitation he sailed for Europe 1866, and she joyfully acknowledged him as her son, but nearly all the rest of Sir Roger's kindred repudiated him. He brought suit against the trustees of the estate to recover his rights. Lady Tichborne died 1863, still believing Castro to be her son Roger. In the trial he was non-suited. The main points against 'the Claimant' were his ignorance of French (in which Roger was fluent), also of incidents in Roger's sojourn in France; the unlikeness of his handwriting to Roger's; the marked physical difference between the two; and Castro's neglect to draw on the large balances due him as Sir Roger and owner of his uncle's estates, when he had been in sore financial straits. The Claimant was then indicted and tried for perjury, convicted, and sentenced 1874, Feb. 28, to 14 years' penal servitude. He was liberated on ticket of leave 1884, Oct. 20.

TICHVIN—TICK.

TICHVIN, *tích-vîn'*: town of Great Russia, govt of Novgorod, 168 m. c.s.e. of St. Petersburg, on the Tichvinka, which, together with the canal of the same name, connects the Volga with the Baltic. It has numerous churches, but is best known for its monastery, which contains a 'thaumaturgical' or miracle-working image of the Virgin. The inhabitants are chiefly employed in the transit-trade by land and water. Pop. (1880) 6,000; (1900) 7,000.

TICINO: river of Switzerland and n. Italy, rising on the s. slopes of Mt. St. Gothard, and flowing s. through Lake Maggiore, and s.s.e. through n. Italy to its junction with the Po, 4 m. below Pavia. Entire length about 120 m., 75 of which, from Lake Maggiore, are navigable.

TICINO, *tê-chě'nō*, or **TESSIN**, *těs-săng'*: most southern canton of Switzerland, bounded w. and s. by Italy, e. by Italy and the canton of Grisons; 1,082 sq. m. Its surface, forming a portion of the s. slope of the Alps, comprises lofty mountains in the north. The n. boundary between T. and the canton of Uri and Grisons is a range of the Lepontine Alps, rising in Mount St. Gothard (q.v.) about 12,000 ft. Offsets from the Lepontine and Rhætian Alps occupy the greater part of the canton. In the s., the country falls away into flats, and the scenery becomes Italian. The principal rivers are the Ticino (q.v.), by which nearly the whole canton is drained, and from which it is named. In the n., cattle-breeding and preparation of dairy produce are chief employments. South of the Alpine regions are elevated forest-clad districts; and further s., olive-yards and vineyards, corn-fields and plantations of figs, almonds, oranges, citrons, and pomegranates occur. T. varies as much in climate as in productions. Cattle, cheese, wine, fruits, and hay are exported. The n. part of Lake Maggiore, and almost the whole of Lake Lugano, are within the canton. The inhabitants belong to the Italian type, and nearly all speak Italian and are Rom. Catholics. The chief towns are Bellinzona, Locarno, and Lugano, each of which is by turns the seat of government.—Pop. of T. (1880) 130,777; (1888) 126,751; (1900) 138,638.

TICK, n. *tĭk* [*F. tique*; Low Ger. *teke*; Ger. *zecke*]: an arachnid, a parasite on sheep, dogs, etc. (see below); the *Meloph'agus ovinus*, or sheep spider-fly, which burrows its forepart into the flesh or fat of the sheep; a small bean used for feeding horses, etc. **TICK-SEED**, a plant.

TICK, v. *tĭk* [imitative of the sound of light knocking: Dut. *tikken*, to pat, to touch: Low Ger. *tikk*, a light touch]: to touch lightly; make a small quick noise; to beat, or emit a slight recurring click, as a watch or clock; place a dot on, over, or against: N. a dot or small mark with the point of a pen; beat or recurring click, as of a watch. **TICK'-ING**, imp. **TICKED**, pp. *tĭkt*. **TICK'ER**, n. *-ēr*, in *slang*, a watch; a telegraphic instrument, especially one which records the prices of stocks. **TO TICK A THING OFF**, to mark an item with the touch of a pen. **ON TICK**, on credit. **TICK-TACK**, the noise occasioned by two successive vibrations of the pendulum of a clock.

TICK—TICKET.

TICK, n. *tík* [Dut. *tijk*; Ger. *zieche*, a tick or covering of a bed: mid. L. *techa*, a linen case, a corruption of L. *thēca*; Gr. *thēkē*, a case]: cover or case of a bed which contains the feathers, wool, or other stuffing; the strong cloth of which such cases or covers are made. **TICKEN**, n. *tík'n*, or **TICK'ING**, n. *-ing*, the strong cloth, formerly of linen, now largely of cotton, used for bed-ticks.

TICK: popular name of a great number of *Acarides* (see **ACARUS**: also **MITE**), forming a section called *Suctoria*, having the mouth in the form of a sucker, with no apparent mandibles. They live by sucking the juices of plants and animals. Some are aquatic. The Harvest-bug (q.v.) is a well-known example of the suctorial *Acarides*: it belongs to a family called *Leptidæ*. The name T. is given particularly to the family *Ixodidæ*. They abound in almost all parts of the world, but chiefly in warm countries, in which they are very troublesome. Many live in woods, attached to branches, but are ready to attach themselves to animals, which sometimes suffer greatly from their numbers, their blood-sucking powers, and the inflammation which they cause. The Tampan (q.v.) is a very troublesome T. of s. Africa. The Carapata of Brazil is scarcely less annoying: it infests dry bushy places, clusters of many hundreds being found clinging to very slender twigs, and they instantly transfer themselves to any horse, ox, or other quadruped which comes in contact with them, burying their serrated suckers in its skin, so that they cannot be withdrawn without considerable force. If not taken off, they increase in size, till they become as large as a horse-bean, or even larger. Whole herds of cattle sometimes perish from the exhaustion which they cause. Wet weather, however, soon kills them, and an animal made to swim across a river is almost freed from them at once. Travellers in interior Brazil are sometimes obliged to pick off hundreds before retiring for the night.—The Cattle T. is *Ixodes bovis*.—The Dog T. (*Ixodes ricinus*) of Europe attaches itself to dogs, oxen, and other animals, sometimes even to man. It is in form and size like a grain of linseed, oval, shining, reddish, with a pale margin. The body swells to the size of a small horse-bean after the T. has attached itself to an animal, and the wound is attended with much inflammation and pain. Tortoises have ticks peculiar to them, which adhere to their neck, and by the thickness of their leathery coat, are preserved from being crushed when the head is retracted. The 'Sheep-tick' is not a tick (see **SHEEP**), nor the Horse-tick and Bird-ticks; all these belong to the order *Diptera*.

TICKET, n. *tík'ët* [F. *étiquette*, a little note or ticket]: a mark stuck on the outside of anything to give notice of something concerning it; a label; a slip of paper bearing a mark, number, etc.; a card or slip of paper serving as a token or certificate of a right, a debt, or the like; small card inscribed and numbered, admitting to a place of amusement, or to travel on a railway, steamboat, etc.; in the United States, list of candidates nominated or put forward by a party for election; an account stuck up; a score, now re-

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duced to *tick*, as to buy on *ticket*, that is, on *tick* or credit: now obsolete in this sense: V. to distinguish by a ticket; to attach a ticket or label to. TICK'ETING, imp. TICK'ETED, pp. TICKET-PORTER, a porter licensed to carry packages, luggage, etc., and wearing a ticket or badge as evidence of his right. TICKET OF LEAVE, a license to be at large, granted to a well-behaved convict before the expiry of his sentence, but liable to be forfeited on misconduct (see below). TICKET-WRITER, one who writes and paints show-cards for shop-windows. THE TICKET, in *slang*, the right or correct thing.

TICKET OF LEAVE: originally a kind of permit to be at large given to convicts transported to Australia, after a certain period of their sentences had expired, but requiring the convict who held it to remain within a particular district. The term was afterward popularly applied to the kind of document, called technically an 'order of license,' which sets a convict at large in the Brit. empire before the expiry of his sentence. The occasion of its first use was when, after 1840, the colonies, one after another, refused to receive convicts. If those sentenced to transportation were kept in prison in Britain for the whole period of sentence, its severity would be greatly increased; hence, by way of compensation to the convicts not taken abroad, part of their sentence was remitted. When penal servitude was substituted for transportation the partial remission was made systematic, as an inducement to good conduct and industry. Under the act of 1864, the period of remission which may thus be gained is for men about a fourth, and for women about a third, of the whole sentence. See CONVICT: PRISONS—PRISON DISCIPLINE.

TICKING: see TICK: TICKEN.

TICKLE, v. *tik'kl* [from Eng. *tick*, to mark with dots: Low Ger. *ticken*, to touch lightly: Scot. *kittle*; Dut. *kitte-len*; Ger. *kitzeln*, to tickle]: to touch lightly, as some sensitive part of the skin, so as to cause a peculiar thrilling sensation which excites laughter in most persons; to please by slight gratification; to excite the sensation of tickling; to feel tickling: ADJ. in *OE.*, ticklish; uncertain. TIC'KLING, imp. *-klīng*: N. the peculiar sensation produced by titillation or slight touches on some sensitive part. TICKLED, pp. *tik'kld*. TIC'KLER, n. *-klēr*, one who tickles; *familiarly*, anything difficult or insoluble; a puzzling thing; a memorandum-book kept to tickle or refresh the memory. TIC'KLISH, a. *-klīsh*, easily tickled; easily moved or affected; tottering; nice; critical; difficult. TIC'KLISHLY, ad. *-lī*. TIC'KLISHNESS, n. *-nēs*, the state or quality of being very sensitive; criticalness of state.

TICKNOR, *tik'nēr*, GEORGE: scholar and author: 1791, Aug. 1—1871, Jan. 26; b. Boston; son of Elisha T., who had been principal of a public school, and who originated the free primary school system of Boston, and founded the first savings-bank in New England. He was educated at Dartmouth College, admitted to the bar 1813, but applied himself to literature. From 1815, he spent four years in

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Europe, at Göttingen, Rome, Madrid, Paris, Edinburgh, and London, where his cultured mind and attractive nature opened to him the acquaintance of the most distinguished men of letters. Returning to America, he became prof. of French and Spanish languages and literature in Harvard Univ. In 1835, resigning his professorship to Henry W. Longfellow, he went with his family to Europe, where he remained three years, collecting materials for his *History of Spanish Literature* (New York, 1849, 3 vols. 8vo), an exhaustive and admirable work on a subject then new in Europe as well as America, which has been translated into Spanish and German. T. edited *The Remains of Nathaniel Appleton Haven*, and wrote a *Life of Lafayette*, pub. 1824 in the *North American Review*. He pub. 1864 a biography of his friend, W. H. Prescott, the historian. The bent of his mind was expository, rather than keenly critical; which reduces somewhat the value of his work if judged by the severer standard of recent criticism; but in its systematizing and making accessible a vast mass of vague and unexplored material, his *History of Spanish Literature* has a merit and rendered a service of very high order.—See *Life, Letters, and Journals of George Ticknor* (Boston 1876).

TICKNOR, *tik'nēr*, WILLIAM DAVIS: publisher: 1810, Aug. 6—1864, Apr. 10: b. Lebanon, N. H. He engaged in the publishing business in Boston 1832, for the first year with a partner, then till 1845 in his own sole name; after 1845 he had two partners, John Reed and James T. Fields (Ticknor, Reed, and Fields); after 1854 the style was 'Ticknor and Fields.' The firm took high rank from its start. T. was among the first publishers in America to compensate foreign authors whose works they issued: the beginning was the payment of £100 to Tennyson, 1842.

TICONDEROGA, *tī-kōn-dēr-ō'ga*: town in Essex co., N. Y.; on Lake Champlain and inclosing the outlet of Lake George, and on the Central Vermont and the Delaware and Hudson Canal Co.'s railroads; 90 m. n.-by-e. of Albany. It is at the terminus of a mountain ridge between the two lakes, whose highest point, Mt. Defiance, is 750 ft. above the level of Lake Champlain. The outlet of Lake George, 4 m. long, has a fall of 220 ft. in 2 m., which gives the town excellent motive-power for its manufacturing establishments. Since the fire which destroyed nearly the whole business portion 1875, the town has been substantially rebuilt, and has gas and electric lights, 6 churches, 15 public schools, 1 national bank (cap. \$50,000), 1 weekly newspaper, and manufactures of cotton and woolen goods, iron, lead, leather, lumber, and sashes and blinds. Iron ore and superior graphite are found in the town. T. is the s. terminus of the Lake Champlain steamboat line, and is about 2 m. from old Fort Ticonderoga, whose ruins are visited by many tourists annually.—Pop. of town (1880) 3,304; (1890) 4,000; (1900) 5,048.

FORT TICONDEROGA.—The fortification of the promontory was begun by the French after strengthening Crown Point 1755, and was first named Carillon. The same year Sir William Johnson (q.v.) undertook the capture of the

works here and at Crown Point, but was deterred by the heavy reinforcing of the French; yet, desiring a strong post on Lake George, he encountered and defeated Baron von Dieskau (q.v.), and fortified Fort William Henry (q.v.), at the s. end of Lake George. In 1757 Gen. Montcalm left Fort Carillon with a strong French force and reduced Fort William Henry.—In 1758 Gen. Abercrombie, with a British army of 15,000 men, was repulsed in an attempt to carry Fort Carillon by storm; 1759 Gen. Amherst, with 12,000 men, invested the fort till the French were compelled to dismantle and abandon both this fort and Crown Point; and subsequently the English enlarged and strengthened the works at T. and Crown Point at an expense (reported) of \$10,000,000.—At the beginning of the revolutionary war, Fort T. was much reduced in strength and was held by a small British force: Ethan Allen (q.v.) surprised and captured the place 1775, May 10.—Gen. Burgoyne, 1777, July, besieged and took the works, having erected a battery on an unprotected height which commanded the place.—Americans under Gen. Lincoln, 1777, Sep., captured the works on Mt. Hope and Mt. Defiance, released prisoners, and seized valuable war material, but were unable to capture the main fortification. After Burgoyne's surrender the works were dismantled and evacuated.—In 1780 the British reoccupied the place for a short time.—The post was an important one, and the fortifications extended several miles. Fort T. is now a picturesque ruin.

TID, a. *tĭd* [AS. *tĭdder*, tender]: tender; soft; nice—now found only in TID-BIT, or TIT-BIT, n. *-bĭt*, a choice or tender piece.

TID, n. *tĭd* [AS. *tĭd*; Ger. *zeit*, time, season (see TIDE)]: in *Scot.*, proper time; season; proper condition of soil for tillage; humor.

TIDAL: see under TIDE.

TIDBALL, *tĭd'bal*, JOHN CALDWELL: soldier: b. Ohio co., in the old Virginia, 1825, Jan. 25. He graduated at West Point 1848, and was assigned to the 3d artillery. He served in the Army of the Potomac from Bull Run to Gettysburg; was made col. of the 4th N. Y. artillery 1863, Aug. 28; commanded the artillery of the 2d corps through the Richmond campaign, and was engaged in the operations which resulted in Lee's surrender. He became col. of the 3d artillery 1885, and has been brevetted brig.gen. of volunteers. He was retired 1889. T. is author of a *Manual of Heavy Artillery Service*.

TIDE.

TIDE, n. *tīd* [AS. *tīd*, hour, time: Dut. *tijd*; Ger. *zeit*; Dan. and Sw. *tīd*, time, season]: time; season—now used only in composition, as Christmas-*tide*; fit time; opportunity; the alternate ebb and flow, or rising and falling, of large bodies of water, specially of the waters of the ocean, and of bays, rivers, etc., connected with it (see **TIDES**); ebb and flow; stream; current; favorable course; turning-point: V. to drive with the stream; to work in or out of a harbor or stream by favor of the tide. **TĪ'DING**, imp. **TĪ'DED**, pp. **TĪDAL**, a. *tī'dāl*, of or pertaining to the tides; periodically falling and rising with the tides, as a river. **TĪDELESS**, a. *tīd' lēs*, having no tides. **TĪDAL BASIN**, a dock that is filled on the rising of the tide. **TĪDAL RIVER**, a river whose waters up to a certain point in its course rise and fall under the influence of the tide-wave. **TĪDAL WAVE**, the wave of the tides; improperly, the wave of translation produced in the ocean by causes other than those producing the tides, e.g., submarine earthquakes; hence such a wave is improperly called tidal, and should be designated 'earthquake wave,' etc. In a figurative sense, a great and rapid diffusion throughout a community of some passionate impulse.—See **TIDES**: **WAVE**: **EARTHQUAKE**. **TĪDE-CURRENT**, a current in a channel caused by the alternation of the level of the water during the passage of the tide-wave. **TĪDE-DAY**, the interval between two successive arrivals at the same place of the vertex of the tide-wave. **TĪDE-GATE**, in a *basin* or *dock*, a gate to prevent the waters flowing back when the tide ebbs. **TĪDE-GAUGE**, an instr. or apparatus for registering the state of the tide at every instant of time. **TĪDE-MILL**, mill in which tide-water is the motive-power (see **WATER-POWER**). **TĪDE-TABLES**, tables showing the time of high water at any place for any day of the year. **TĪDE-WAITER**, custom-house officer who waits for the arrival of vessels, and remains on board to see that the revenue laws are not violated while the ship is in port. **TĪDE-WAVE**, the accumulation of the waters of the ocean which is caused by the action of the moon, modified by that of the sun, and which changes its position throughout the day. **TĪDE-WAY**, the channel in which the tide sets. **EBB-TĪDE**, the falling back of the water toward the sea. **FLOOD-TĪDE**, the rising and flow of the tide toward the shore. **NEAP-TĪDES**, the tides of least range, caused by the sun and moon when at right angles to each other—that is, during the first and third quarters of the moon. **NOONTĪDE**, the time when the sun is highest in the heavens. **SHROVE-TĪDE**, the time or season for shriving—that is confessing sins—viz., Tuesday before Ash-Wednesday. **SPRING-TĪDE**, the season or time when spring commences. **RETARD** or **AGE** OF THE **TĪDE**, the interval between the transit of the moon at which a tide originates, and the appearance of the tide itself. **SPRING-TĪDES**, the highest, and at the same time the lowest, tides, caused by the joint attraction of the sun and moon when acting in the same direction. **TWELFTH-TĪDE**, the time of Epiphany. To **TĪDE OVER** A **DIFFICULTY**, to pass over or succeed by patient effort in surmounting some difficulty.

TIDES.

TIDES: alternate ebb and flow of oceanic and connected waters. It was known certainly as early as the time of Cæsar, probably long before, that the time of high-water, also the height of the tide, are in some way connected with the age of the moon. And even in the present state of science, what is called the *establishment* of a port, or the time of high-water at new or full moon (that is, the interval between the moon's crossing the meridian and the full tide), which is practically the most important part of the whole question, cannot be predicted by theory, but must be obtained by observation. The first attempt to explain the phenomena of the tides was by Newton; and, considering the little that has since been effected, his approximate solution must be pronounced highly creditable, though in many respects unsatisfactory. D. Bernoulli and others have slightly improved Newton's method; and a complete solution of the problem has been attempted by Laplace. The principles involved in this solution are undoubtedly correct, and the result, so far as it goes, leaves little to be desired. But it is not extensively applicable, for two reasons: first, the lack of adequate knowledge as to the depth of the sea; and, secondly, even with that knowledge, the excessive difficulties of the mathematical processes required in taking account of it, and of the forms of continents and islands.

Newton's approximate method consists in the study of the problem as a *statical* one, and this we will presently describe. Laplace, on the other hand, treats the problem as one of fluid *motion*. Airy and others have, more recently, attempted, with success, to simplify Laplace's process. Curiously, however, the results of all these theories are very much alike; and, while some of the results agree well with observation, others seem irreconcilable with it. We cannot explain Laplace's method without employing high analysis, quite unsuited to this work; so we must be content to describe the faulty theory. In the Newtonian or *Equilibrium* theory, we consider the earth to be spherical, and covered with a layer of water, which would, of course, if left to itself, be uniformly deep over the whole surface. The attraction of the moon (per unit of mass) on the water immediately below her is greater than her attraction on the solid earth (per unit of mass), and tends, therefore, to raise the water at that part of the surface. At the point of the surface directly opposite to the moon, the water-layer is further from the moon than the bulk of the earth; consequently the moon attracts the water (per unit of mass) *less* than it attracts the earth. The tendency is, as it were, to pull the earth away from the water, so that here also the water is raised, though not *quite* so much as on the other side, as the moon's attraction diminishes with distance. The effect of the moon's action on the previously uniform layer of water is thus to elongate it both ways in the direction of the line joining the centres of the earth and moon. On account of the very small amount of this elongation, it is found by mathematical processes, which we cannot give here, that the form of

the surface will become nearly a prolate spheroid (a solid formed by revolution of an ellipse about its *longer* axis).

Before proceeding with explanation, a mistake is to be noted, sometimes expressed by the assertion that since, if the moon and earth were rigidly fixed to each other, the water would rise only on the side next the moon, this must be the case in nature also. This is the same mistake as those commit (see PERTURBATIONS) who allow that at new moon the sun virtually diminishes the moon's gravitation toward the earth, but refuse to allow that the same is true at full moon.

We have now to consider that the moon revolves about the earth, and that the earth also revolves about its axis. Thus the equilibrium figure has never time to form; but an imperfect form of it travels round the earth in the time of a lunar day (24 hours 54 minutes). If the moon be on the equator, it is obvious that similar portions of the water-spheroid will reach any one spot on the earth at intervals of half a lunar day (12 hours 27 minutes). If the moon's declination be considerable, this will not be the case—a place, e.g., whose latitude is equal to the moon's declination, will be reached by one pole of the wave-spheroid when the moon is on the meridian; but in 12 hours 27 minutes, the other pole of the spheroid will not pass over the place, but at a meridian distance of twice the latitude of the place, or twice the moon's declination. Thus, when the moon's declination is sensible, the two tides of each day are not generally equal in height, except for places on the earth's equator. This gives rise to what is called the *diurnal* tide, which is, as it were, superposed upon the ordinary, or *semidiurnal*, tide, and ought to be more sensible as the latitude is greater. Owing to fluid friction and other causes, we should expect that the axis of the tidal spheroid would lag a little behind the moon, and this is found to be the fact.

So far, we have a general explanation of the occurrence of tides twice a day, and of their dependence on the moon. But we started with two assumptions not consistent with fact—viz., that the earth is spherical and uniformly covered with water, and that the moon is the only tide-producing body. The corrections to be made in consequence of the inaccuracy of these assumptions must now be explained. We begin with those due to the latter assumption. The sun, though at an immense distance compared with that of the moon, has such an enormous mass that his tide-producing influence is comparable with that of the moon. In fact, it is easy to see that, as Newton showed, the tide-producing power of an attracting mass is directly as the mass, and inversely as the *cube* of its distance. That it is directly as the mass, is obvious. To prove the other assertion, let R be the earth's radius, D the distance of the attracting body from the earth's centre; then the attraction per unit of mass on the earth is to that per unit of mass on the water nearest the attracting body as

$$\frac{1}{D^2} \text{ to } \frac{4}{(D - R)^2}$$

TIDES.

according to the law of gravitation. The difference between these quantities is proportional to the tide-producing force. But

$$\frac{1}{(D - R)^2} = \frac{1}{D^2 \left(1 - \frac{R}{D}\right)^2} = \frac{1}{D^2} \left(1 + \frac{2R}{D} + \text{etc.}\right)$$

$= \frac{1}{D^2} + \frac{2R}{D^3} +$, etc., the remaining terms being omitted, since D is always much greater than R . The difference is therefore approximately

$$\frac{2R}{D^3},$$

as stated above.

Now the mass of the sun is to that of the moon as 355,000 to 0.0125, and the sun's distance is about 400 times that of the moon. Hence, the tide-producing power of the sun is to that of the moon as

$$\frac{355,000 \text{ to } 0.0125 \times 400^3}{\text{or } 355 \text{ to } 800}.$$

By calculations, which we cannot give here, it has been shown that the difference of length of the axes of the wave-spheroid produced by the moon alone is about 58 inches; so that in that due to the sun it will be about 25.7 inches.

In consequence of the extremely small amount of these effects on the sea-level, we are entitled to simply add or superpose the separate effects of the sun and moon, in order to obtain their joint effect. And now we have at once the explanation of what are called *spring* and *neap* tides. At new and at full moon, the wave-spheroids due to the sun and moon have their axes almost coincident, so that we have a tide which is to the lunar alone as $800 + 355$ to 800, or as 13 to 9 nearly; while, when the moon is in her first or last quarter, the axes are nearly at right angles, and the compound tide is to the lunar tide as $800 - 355$ to 800, or as 5 to 9 nearly. Thus, the height of the spring-tide is to that of the neap-tide in the ratio of about 13 : 5.

Another curious phenomenon, which we can now easily account for, is the 'priming' and 'lagging' of the tides, or the *acceleration* and *retardation* of the time of high-water. If the tides were due to the sun or moon alone, they would recur at equal intervals of time; and this is the fact with the lunar and solar tides separately. But what we observe is the compound tide, and this will obviously have its maximum *between* two consecutive maxima of the lunar and solar tides; but nearer to the lunar tide, as it is the greater. Thus, if about new moon the sun passes the meridian *before* the moon, the tide is accelerated; if *after*, it is retarded. And the same is true about full moon, only that in this case our statement refers to passages of the sun and moon on opposite sides of the meridian. This retardation or acceleration has for its greatest value a period of rather less than an hour; and the respec-

tive maxima occur about $4\frac{1}{2}$ days before and after the spring-tides.

But we meet with far more serious difficulties when we come to consider the actual distribution of water over the earth's surface; and it is here that future improvements in method must be looked for.

But even so inadequate an attempt at a solution as is the equilibrium theory gives us the means of explaining many curious phenomena. It shows, e.g., how exceedingly small we should expect to find the tides in an inland sea, such as the Mediterranean; for there, even when the moon is most favorably situated, the utmost difference of level would be (by calculations which we cannot give here) only about an inch or two; and of this, part would be the rise in one portion of the sea, the rest the fall in others. The popular explanation of this phenomenon is very simple. We have but to notice that, according to the equilibrium theory, the form of the water is a spheroid of definite dimensions, its axes differing from each other by 58 inches. But a small portion of such a spheroid (of the dimensions of the Mediterranean, for instance) can hardly be distinguished from a sphere; so that the form of the surface of a limited mass of water will be but slightly altered by the attractions of the sun and moon.

It is obvious from what has now been said, that the rise of the waters in tidal rivers, estuaries, and deep bays, where it sometimes amounts (even in calm weather) to more than 100 ft., cannot possibly be due to the moon's action on the water of the mere river or bay, but must be almost entirely produced by the tidal wave in the ocean; and, in fact, this part of the problem presents comparatively little difficulty. Once grant the fact of the tidal disturbance of sea-level at the mouth of a river, and the calculation of the motion of the consequent wave in the river-channel is within the power of mathematics. It is by means of investigations made from this point of view, and by others concerning the effect of the moon on long canals, that Laplace's method has been improved. For the details of the process, see Airy on 'Tides and Waves,' in *Encyc. Metrop.* We can here only point out a few of the immediate consequences of the periodic rise and fall of the sea-level as regards the motion of the water of a tidal river. Here the tide always runs *up* the river, even when this is the opposite direction to that in which the moon appears to move. In the open sea at the mouth of the river the interval from high to low water is almost exactly equal to that from low to high water each being about $6\frac{1}{2}$ hours nearly. But the further we go up the river, the greater becomes the disparity between these periods, high-water following low-water at shorter and shorter intervals, while the intervals during which the tide falls are correspondingly increased. In some cases, the interval from low to high water is so short that the tide-wave rushes suddenly up, and, spreading over the flat sands at the side of the channel, forms a dangerous surf called a *Bore* (q.v.).

Connected with these peculiarities, there is also a singu-

lar effect produced on the direction of the current in a tidal river. In the open ocean, the water merely rises and falls, there being no perceptible tidal current. Sailors are in the habit of associating the cessation of currents, or 'slack' water, with the occurrence of high and low water. This is the case in bays, but not in rivers, and it gives rise to some curious errors regarding the time of high-water in rivers. Thus it is sometimes said that it is high-water in the centre of a river-channel long after it is high-water at the shore—an obvious absurdity. The truth is, the current does not cease simultaneously at the shore and in mid-channel. At the mouth of a tidal river, the water runs upward for hours after high-water, and downward after low; and the same is true, in less degree, at places higher up the stream.

When considerable alterations of breadth or depth occur in the channel of a river, we find corresponding alterations in the amount of rise of the tide. Thus, according to Airy, at the entrance of the Bristol Channel the whole rise at spring-tides is about 18 ft.; at Swansea, 30 ft.; and at Chepstow, 50 ft. At Annapolis, in the Bay of Fundy, the tide is said to rise 120 ft. Again, the same port may be reached by two tide-waves coming from the ocean by different channels; and here we have to compound the two disturbances just as we did with the separate lunar and solar tides. In the German Ocean, we have a very good example; but the most remarkable is the tide at Batsham, in Tonquin. At this port, two tide-waves meet, coming respectively from the Indian and China seas; these bring, simultaneously, opposite but nearly equal changes in the water-level, so that there is almost no perceptible tide.

Whewell, Lubbock, and others have added much to our knowledge of the *facts* of the tides; and have constructed what are believed to be approximately accurate charts of *Cotidal Lines*—that is, lines representing the positions of the crest of the tide-wave at hourly intervals as it sweeps round the earth. Much, however, remains to be done in this direction, before we can elicit from observation such hints as may enable us to improve the mathematical theory of the subject.

The frictional resistance to the motion of the tide-wave of course produces heat. This heat is a transformation of part of the earth's energy (see FORCE) of rotation; thus it appears that the tides are gradually lengthening the day. We may see easily that this would go on, were the moon the only tide-producing body, so long as the earth rotates about her axis in less time than a lunar month. For, if the length of the (sidereal) day were that of a lunar month, the earth would always turn the same face to the moon; and the tide-spheroid would have a *fixed* position on the earth, and there would be no loss of energy by friction. Simple as this deduction is, though it seems to have been roughly guessed at by Kant, it was not formally enunciated till after his time. Mayer was the first to publish anything on the subject, though it seems to have been previously noticed by others. One of the most curious deductions

from it is the recent speculation which assigns, as the cause of the moon's turning always the same face to the earth, the friction of the enormous tides which must have been produced by the earth in her mass when it was in a molten state, on the surface at least, if not throughout.

For tidal evolution and the theory, based on Dr. G. H. Darwin's calculations, that in early geologic times the size of the tides was vastly greater than at present (owing to the greater nearness of the moon), see *Nature*, XXV., XXVI.

TIDINGS, n. plu. *tī'dīngz* [AS. *tidan*, to happen: Dut., *tijding*; Dan. *tidende*; Ger. *zeitung*, events, news (see **TIDE**)]: news; intelligence; information—formerly sometimes used in the singular. **TIDINGLESS**, a. without news or tidings.

TIDOLOGY, n. *tī-dol'ō-jī* [Eng. *tide*, and Gr. *logos*, discourse]: the theory or doctrine of the tides; that department of science which treats of the general laws that govern tides, and the circumstances, of a local or casual nature, which may influence their height and time.

TIDY, a. *tī-dī* [Dan. and Sw. *tidig*, timely: Ger. *zeitig*, seasonable: Dut. *tijdig*, timely, in season (see **TIDE**)]: seasonable; opportune; suitable; arranged in good order; neat; orderly; respectable; good; satisfactory: V. to make neat and clean; to put in good order: N. a piece of fancy work to throw over the back of an arm-chair, a sofa, or the like; a child's light outer covering; a pinafore. **TIDYING**, imp. **TIDIED**, pp. *-dīd*, arranged in neat order. **TIDILY**, ad. *-dī-lī*. **TIDINESS**, n. *-nēs*, the quality or state of being arranged with neatness and simplicity. *Note.*—The entries *tide*, *tidings*, and *tidy*, are etymologically connected, though conveying widely different ideas.

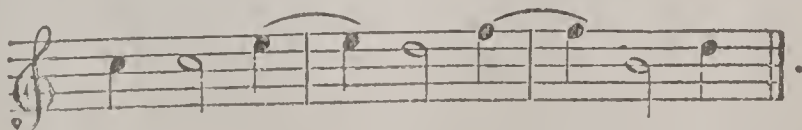
TIE, v. *tī* [AS. *tige*, a drawing, a tie; *teón*, to pull: Icel. *taug*, a tie: Low Ger. *teen*; Ger. *ziehen*, to draw]: to fasten or bind, as with a cord; to make fast: to unite so as not to be easily parted; to constrain; to confine; to unite; N. a fastening; a knot; obligation arising from relationship or friendship; a piece of timber or metal used to bind together two bodies having a tendency to diverge: in *music*, a curved line written over two notes on the same degree, uniting them so that they are played or sung as a single note of the same value. Thus, for the two C's written in the example



, one is played of the value of a minim

and quaver combined. The tie is often used in syncopated passages to connect the last note of one measure with the first of the succeeding one, when the former note, which would otherwise be unaccented, acquires the emphasis of the

latter :



(See **SYNCOPIATION**.) *Tie* is also an equality in numbers

as in votes, so hindering either party from being victorious; a knot of hair; a sort of neckcloth. TY'ING, imp. TIED, pp. *tīd*. TI'ER, n. -*ér*, one who or that which ties. TIE-BEAM, the horizontal beam which connects the bottom of a pair of principal rafters (see ROOF). To TIE DOWN, to fasten in order to hinder from rising; to impose a legal or moral obligation upon; to restrain. To TIE UP, to confine; to restrain, especially used of money.—SYN. of 'tie, v.': to bind; fasten; knit; hold; hinder; obstruct; oblige; constrain; restrain; confine; knot.

TIECK, *tēk*, LUDWIG: brilliant and prolific German novelist and poet of the romantic school: 1773, May 31—1853, Apr. 28; b. Berlin. He studied at the universities of Halle, Göttingen, and Erlangen. He made his first appearance as an author in the *Straussfeder* (Ostrich-feather) magazine, conducted by Musäus (q.v.) and J. G. Müller, for which he wrote a series of little tales, of which the best was *Die beiden merkwürdigsten Tage aus Siegmann's Leben* (The Two Most Remarkable Days in Siegmann's Life). But the originality of his genius displayed itself first in his romances of *Abdallah* (Berl. 1795) and *William Lovell* (3 vols. Berl. 1795). These were followed by his *Peter Lebrecht, eine Geschichte ohne Abenteuerlichkeiten* (Peter Lebrecht: a History without Adventures, 2 vols. Berl. 1795-6), and *Peter Lebrecht's Volksmärchen* (3 vols. Berl. 1797), remarkable equally for richness of fancy, artless simplicity, and overflowing humor. In some of these *Märchen*, e.g., his 'Bluebeard,' 'Puss-in-Boots' (*Der gestiefelte Kater*), and 'The Life and Death of Little Red Riding-hood' (*Leben und Tod des kleinen Rothkäppchen*), he combated with satiric humor, perhaps, too, with some youthful arrogance, the 'enlightened' notions on which the literature of the 18th c. prided itself—showing distinctly his strong tendencies toward the deeper poetic spirit of the middle ages. The same polemic was maintained in his comedy *Die verkehrte Welt* (The Topsy-turvy World, 1799). To this period belong also his *Herzensergiessungen eines kunstliebendenn Klosterbruders* (Heart-effusions of an Art-loving Monk, Berl. 1799), *Franz Sternbald's Wanderungen*, art-novel (2 vols. Berl. 1798), and *Phantasien über die Kunst* (Fancies on Art, Hamb. 1799); full of noble enthusiasm for art, but pervaded by a dreamy mystical religiosity, which is no longer admirable. These works brought T. into close relationship with A. W. von Schlegel and others, and led to the establishment of the literary sect or coterie known as the 'Romantic School' (q.v.), whose influence on the later literature of Germany and France has been very great, and not always very good. T. now married the daughter of a Hamburg clergyman who had been a friend of Lessing; and 1799 went to Jena, where he added Steffens to the list of his friends. Here he published his famous *Romantische Dichtungen* (2 vols. 1799-1800). His transl. of *Don Quixote* (4 vols. Berl. 1799-1801, 3d ed. 1831) far surpassed all previous attempts. In 1802 he joined A. W. von Schlegel in the *Musen-Almanach*; and 1804 published his longest romance, *Kaiser Octavianus*. T.'s health now began to fail, and 1805 he

TIEL—TIEN-TSIN.

visited Italy. On his return to Germany, he settled, after some changes, at Ziebingen 1811, where he formed a friendship with the philosopher Solger, who exercised a great influence over his mind. Thenceforth he showed less of the dreamy and formless mysticism of his earlier years, and more of the artistic element. The change—amounting to a break with the romantic school—becomes visible in *Phantastus* (3 vols. Berl. 1812–15) and in *Ulrich's von Lichtenstein Frauendienst* (Tüb. 1815). In 1817, with a friend, Burgsdorf, he visited England, where he collected fresh materials for his Shakespeare. 1819–40 he resided at Dresden; but on the accession to the throne of Friedrich Wilhelm IV. of Prussia, he was invited to Berlin; and there he resided for the rest of his life.—Important works of T.'s, besides those above mentioned, are: *Novellenkranz* (Berl. 1831–35, complete in 12 vols. Berl. 1853), in which there is hardly a trace of the credulous romanticism of his earlier years, but abundance of lively and subtle talk on the literature and life of the Present; *Dramaturgische Blätter* (2 vols. Bresl. 1826), repub. in his *Kritische Schriften* (4 vols. Leip. 1848–52); *Shakespeare's Vorschule* (2 vols. Leip. 1823–29); and his splendid continuation of Schlegel's translation of Shakespeare. T. revised a collected but incomplete edition of his works, 20 vols. (Berl. 1828–42). In Eng. transl., see tales from *Phantastus* in Carlyle's *Specimens of German Romance*; Bp. Thirlwall's rendering of *The Pictures* and of *The Betrothal*.—See Köpek's admirable *Life of Tieck* (2 vols.), which gives a complete chronological list of T.'s works.

TIEL, *tēl*: town, the seat of an arrondissement in the Netherlands, province of Gelderland; picturesquely situated on the right bank of the Waal. In the 5th c. it was called Tellum or Thiela. The fortifications have been demolished, and formed into beautiful walks. Principal buildings are the town-house, court-house, chamber of trade, and the great Reformed Church of St. Martin. T. has a good haven, and large trade in agricultural produce and cattle. It imports grain, earthenware, wood, lime, coal, bricks, salt, etc.; and exports potatoes, grain, colza, pigs, flax, apples, cherries, etc. Principal industries are copper-founding, brick-making, tanning, book-printing, paper-making, beer-brewing, etc.—Pop. (1879) 8,933.

TIEN-TEH, *tē-ēn'tēh'* (Celestial Virtue): name given to the *Tae-ping-wang* (king of universal peace), pretender to imperial authority in China, and head of the mighty insurrection which for 16 years convulsed that country: see **CHINESE EMPIRE: TAE-PINGS**.

TIEN-TSIN, *tē-ēn'tsēn'* (Heaven's Ford): large and important city and river-port of China, province of Chih-le, on the right bank of the Pei-ho, near the junction with the Grand canal, 34 m. from the mouth of the Pei-ho by land, and 68 m. by the windings of the stream; lat. 39° 10' n., long. 117° 3' 55" e. It is the port of the city of Peking, from which it is 80 m. s.e. The streets are unpaved, and the houses, principally of mud or dried bricks, have a

TIER—TIERRA DEL FUEGO.

mean appearance, though the central parts of the town are filled with well-built houses. The maximum of heat in the summer is 106° , the maximum of cold is 6° below zero. The river is generally frozen over from about the beginning of Dec. to the middle of March, and the business, at other times carried on by means of boats and junks, is taken up by sledges, which swarm on the river. By the treaty of T., signed here 1858, Nov., and by the subsequent convention of Peking, 1860, Oct., the port was declared open; and the first consulate was established 1861, Jan. In 1881 T. was connected by telegraph with Shanghai (the line extending to Peking). In 1881, T. had 435 vessels of 260,337 tons. Value of imports 1899, \$10,235,234; exports \$7,805,765. There is large and increasing trans-trade with Russia *viâ* Siberia, tea to the value of about \$4,500,000 having been forwarded 1875 from T. overland to Russia. The principal imports are opium; shirtings, chintzes, and other cotton goods; needles, window-glass, sugar (brown and white), and paper; chief exports are peas and dates. A large arsenal and extensive powder-mills are maintained by the government.—Tien-tsin is the name also of the *department* of which T. is the chief city.—Pop. of city (which is walled and of about 3 m. in circuit) and of the suburbs reckoned at 1,000,000. During the Boxer uprising of 1900, T. was the center of military operations. On July 13-14 the native city and the forts were captured by the allies.

TIER, n. *tēr* [OF. *tiere*, a row: Dut. *tuyer*; Low Ger. *tier*, a row of connected things]: a row, especially where two or more are placed one above another, as seats in a theatre or other public building.

TIERCE, n. *tērs* [F. *tierce*, a third—from L. *tertius*, third—from *tres*, three]: a third; a cask whose contents are one-third of a pipe—viz., 42 gallons; a cask intermediate in size between a barrel and a hogshead: in *gaming*, a sequence of three cards of the same color: a particular thrust in Fencing (q.v.): in *music*, a major or minor third: in *her.*, a term indicating that the field is divided by lines into three equal parts (*tiercé*). A shield may be tiercé in pale, in fess, in bend, in bend sinister, or in pall.

TIERCEL, n. *tēr'sēl*, or **TIER'CELET**, n. *-slēt* [F. *tiercelet*, a male hawk—from mid. L. *tertiolus*, a goshawk—from L. *tertius*, the third]: a small goshawk—so called from being the male, and a third smaller than the female, or from its being, according to an old fancy, the product of a third egg.

TIERRA DEL FUEGO, *tē-ēr'rá dēl fwā'gō* (Land of Fire): large archipelago at the extreme s. of S. America, from whose mainland it is separated by Magellan's Strait (see **MAGELLAN**, **STRAIT OF**). It comprises 11 large islands, of which the chief is King Charles's South Land, and about 20 islets; lat. $52^{\circ} 40'$ — $55^{\circ} 59'$ s., long. $63^{\circ} 30'$ — $74^{\circ} 35'$ w. The group extends more than 400 m. n.w. and s.e., nearly in line with the Patagonian Andes; and about 270 m. e. and w., diminishing southward. King Charles's South Land, which forms more than three-fourths of the entire

TIERS ÉTAT.

area, is more than 200 m. long from n. to s.; about 21,260 sq. m. This island, like the other islands of the archipelago and the coast of the mainland, is much broken on the w. side by gulfs and inlets. The e. coasts are mostly level and wooded; the w. coasts rocky and mountainous. The general aspect of the group is wild and desolate in the extreme. Some localities, however, present a milder scene: the coast-scenery of Picton Island resembles that of the s.w. coast of England. The s. part of the island is chiefly in moor and down; the n. is covered with forests. The scenery is fine, and there are fresh-water lakes, frequented by abundance of water-fowl. Many of the mountains are volcanic—whence the name of the region; and lava and volcanic productions abound. The highest mountains rise 6,000 to 7,000 ft., and are covered with snow. The climate is raw and cold, violent rains and snow-storms occurring in every season of the year. In this region, the waters of the Atlantic and Pacific meet and struggle together, and terrific tempests are frequent. Wild celery and spoonwort are the only edible plants; but by far the most important articles of food are shell-fish, which abound on the coasts, and a globular fungus, which grows in clusters round the trunk of the antarctic beech—an elegant evergreen, and the prevailing tree in the archipelago. Three different tribes of people inhabit the archipelago, which (since 1881) is divided between Chili (the w. portion) and the Argentine Republic (the e. portion). The Onas, who are tall and resemble the Patagonians, occupy the n. and e.; the Yahgans are found on the Beagle Channel and the s. islands; the Alaculoofs are on the w. islands. The last two tribes are stunted and degraded, the men being about 5 ft. 3 inches in height, the women 5 ft. The only quadruped among them is the dog. When driven to extremities, they first eat their dogs, and then kill and eat the old women of their tribe. Abortive attempts have been made to convert these savages to Christianity. In 1850 a mission-party of seven men, under Capt. Allen Gardiner, projector of the expedition, arrived at T. del F. The missionaries were not well received by the natives, and the narrative of their residence on these coasts is a record of miserable disasters. By gross mismanagement on the part of the home authorities, the wants of the mission-party were neglected, and they were soon destitute of provisions. The promised relief never came; and, in the autumn of 1851, the whole party, after great sufferings, died of starvation. In the autumn of 1854, another missionary expedition set sail from Bristol, England, for T. del F., under command of Capt. W. Parker Snow; but, after many endeavors, the attempt to form a mission-station was abandoned.

TIERS ÉTAT, n. *têr'z'ā-tā* [F., third estate]: in *F. hist.*, the third branch of the legislative assembly, consisting of representatives of the trading inhabitants of the towns, and of the peasantry in the country. The T. E. had an important part in the opening scene of the Revolution. On the two other estates of nobles and clergy refusing to join them and deliberate in a common chamber, they, 1789, June 17,

TIETJENS—TIFFANY.

assumed the title *Assemblée Nationale*, with the sole right to legislate for France. The French T. E. differed completely in its origin from the third estate or commons of England. The latter originated in the permission granted to the minor barons, instead of personally attending the national council, to appear by representatives; and with the representatives of the minor barons were joined in one house the representatives of the municipalities, which, as corporations, came to be considered in the light of tenants *in capite* of the crown. The designation 'commons,' and the absence of title, have often misled foreigners to suppose that the men who gained their liberties and constitution for the English people were the *roturiers* or *bourgeois*; whereas they mostly belonged to the class which would, in continental phraseology, be called the nobility of the country.

TIETJENS (or TITIENS), *tēt'yénss*, TERESA: one of the greatest of recent operatic singers: 1834–1877, Oct.; b. Hamburg; of Hungarian parents. She made her *début* in that city in the character of Lucrezia Borgia, 1849, taking at once a very high position on the lyric stage; at Frankfurt and Vienna she was even more warmly received; and her first appearance in London, 1858, was quite a triumph. The great volume and purity of her voice, and her energetic but dignified acting, combined to make her an unrivalled representative of strong dramatic parts. She acquired great fluency and flexibility of voice by diligent practice. She was probably the hardest-worked singer that has appeared; and though this did not seem to injure her voice, it doubtless wore out her constitution.

TIFF, n. *tif* [prov. Eng. *tiff*, a sup or draught of drink; *tiffing*, eating or drinking out of season: Norw. *tev* or *tæft*, drawing the breath]: a small sup or draught of liquor; a slight quarrel or altercation. TIFFIN, n. *tif'fīn*, a slight repast between breakfast and dinner; luncheon—a term generally used among Anglo-Indians. TIFT, n. *tift*, a fit of ill-humor or peevishness; altercation. TIFTY, a. *tif'ti*, ill-natured; petulant; also TIF'FISH, a. *-fish*.

TIFFANY, n. *tif'fä-ni* [perhaps the same as TAFFETA, which see]: a kind of gauze or very thin silk.

TIFFANY, *tif'a-ni*, CHARLES COMFORT, D.D.: Prot. Episc. minister: b. Baltimore, 1829, Oct.; brother of Otis H. T. He pursued his academic and theological studies in Dickinson Coll., Andover Theol. Seminary, and in Halle and Heidelberg universities. He entered the Congl. ministry; but afterward (1866) was ordained priest in the Prot. Episc. Chh. He has been rector of churches in Boston and in the suburbs of New York, and for 18 years in Zion Church in New York. He is a discriminating thinker and a lucid writer; and has published essays on Rationalism, Agnosticism, and other topics; and a book of travel, *Norway and the Midnight Sun*. His History of the Protestant Episcopal Church in the United States shows thorough research, prosecuted in that spirit of candor which is one of the fruits of Christian charity, and set forth in admirable literary form.

TIFFANY—TIFLIS.

TIF'FANY, LOUIS COMFORT: artist painter: b. New York, 1848, Feb. 18. He studied painting under George Innes in New York and in Paris under Léon Bailly. He then travelled extensively in Europe and in Africa. Returning to America 1870, he was elected member of the Water-color Soc., and member of the National Acad. 1880. Many of his oil-paintings and works in water-colors are esteemed highly. He is founder of the Tiffany Glass Co. of New York, and he applies himself exclusively to making designs for colored glass windows and other decorative work. His achievements in this branch of design have won him wide fame.

TIF'FANY, OTIS HENRY, D.D.: Methodist Episc. clergyman: 1825–1891, Oct. 24; b. Baltimore, Md. He was educated at Dickinson Coll.; became minister in the Meth. Episc. Chh. 1845; was prof. of mathematics in Dickinson Coll. 1850–57; and then had important pastoral charges in Baltimore, Chicago, Washington, Philadelphia, New York, and Minneapolis, successively. He had wide repute as a preacher and pastor.

TIFFIN, *tif'in*: city, cap. of Seneca co., O.; on the Sandusky river, and on the Baltimore and Ohio, the Cleveland Cincinnati Chicago and St. Louis, and the Northwestern Ohio railroads; 34 m. s.w. of Sandusky, 42 m. s.s.e. of Toledo. It is the centre of a large wheat region, was located 1821, and made co. seat, 1822. It has 16 churches; 39 teachers and 1,550 pupils in its public schools: Ursuline convent, orphan asylum, 2 nat. banks (cap. \$350,000), 1 state bank, 1 sav. bank and 2 daily, 1 semi-weekly, 4 weekly and 1 monthly periodicals. The industries comprise manufacture of iron-foundry products, glass, pottery, stoneware, tiles, carriages, stoves, agricultural implements, sashes and blinds, and woolen goods. T. is the seat of Heidelberg Coll. (Ref.) opened 1850, which had 1901–2 32 professors and instructors, 341 students, 2 endowed professorships, 15,000 vols. in library, \$125,000 in productive funds, \$250,000 in grounds and buildings, and \$10,000 income; Charles E. Miller, A.M., pres. Pop. (1880) 7,879; (1890) 10,978; (1900) 10,989.

TIF'FIN, EDWARD: statesman: b. Carlisle, Eng., 1766, June 19—1829, Aug. 9. He came to this country; was educated in the Univ. of Penn. 1789; was a Meth. preacher 1792–99, at the same time practicing medicine in Chillicothe, O.; member of the legislature of the N.W. Terr. 1799, and pres. of the convention that framed the constitution of O. 1802; was the first gov. of O., elected 1803, re-elected 1805; was chosen U. S. senator 1807, but resigned 1809, and resumed the practice of medicine; was the first commissioner of the U. S. land office 1812; later for many years surveyor of public lands n.w. of the Ohio river.

TIFLIS, *tif'lis* or *tif-lēs'*: government of the Russian lieutenancy of Caucasia, immediately s. of the Caucasus; 15,613 sq. m. It is traversed by several chains of mountains, which belong either to the Caucasian Mts. (the peak of Kazbeck, 17,500 ft. high) and extend over the n. and e. parts of the govt., or to the Ararat, Achaltzick, and Alagiz

TIFLIS—TIGER.

Mts., spreading from the sources of the Kur and Arax over the s. districts. The principal lake, Goktcha, is about 50 m. long, and nearly 20 m. in extreme breadth. The rivers, the chief of which are the Kur and Arax, rise amid mountains, are very rapid, are confined between high banks, and are not navigable. The climate varies with the elevation of the surface; the soil, very fertile in some tracts, is not in general cultivated. Grain, tobacco, cotton, indigo, vegetables, and grapes are produced abundantly. T. is rich in mineral springs and in timber, the principal trees being the oak, elm, chestnut, and maple. The Christian and Mohammedan are the predominant creeds. Pop., about 1,000,000; chiefly Georgians, Armenians and Tartars.

TIFLIS: important Russian city, cap. of the govt. of T. and of Russian Caucasus (s. of the mountain range of that name); on both banks of the Kur, 165 m.—direct line—e.s.e. of the Black Sea. There are several manufactories, of woolen and linen cloths, carpets, and arms. T. was formerly a fortress, and cap. of the dist. of Georgia. It has active trade with Persia, and is the great emporium of the Russian territory s. of the Caucasus; indeed, its trade, domestic and foreign, is of great importance. In the vicinity are naphtha springs as well as thermal springs, which are much visited. T. was founded in the 4th c., and annexed to Russia 1802.—Pop. (1894) 105,174—Armenians 31,180. Georgians 14,787; (1897) 160,645.

TIG, n. *tīg* [Low Ger. *tikk*, a light touch (see TICK 2)]: in *Scot.* and *prov. Eng.*, the game known in the United States as *tag*, in which one person runs after others till he can *tig* or touch one and cry *tīg*, the person so touched becoming, in his turn, a pursuer; the touch or stroke so given: V. to touch another in the game of *tig*. **TIG'GING**, imp. **TIGGED**, pp. *tīgd*.

TIGE, n. *těj* [F. *tige*, a stalk or stem—from L. *tibia*, a pipe or flute]: in *arch.*, the shaft of a column from the astragal to the capital; in *ord.*, a pin at the base of the breech in the Thouvenin system of firearms, for expanding the base of the ball; an anvil or support for the cap or primer in a central-fire cartridge.

TIGELLUS, n. *tī-jěll' lūs*, or **TIGEL'LA**, n. *-lā* [a Latinized word from F. *tigelle*—from *tige*, a stem (see TIGE)]: in *bot.*, the portion of the embryo between the radicle and cotyledons; the young embryonic axis.

TIGER, n. *tī'gēr* [F. *tigre*, a tiger; *tigré*, spotted—from L. and Gr. *tigris*, a tiger—said to be from O. Per. *tighri*, an arrow, so named from its swiftness]: a fierce rapacious animal of Asia of the feline family (see below): a servant in livery who rides with his master. **TI'GERISH**, a. *-ish*, or **TI'GRISH**, a. *-grish*, like a tiger; fierce. **TIGER-CAT**, carnivorous animal resembling the tiger, but of smaller size (see below). **TIGER-FOOTED**, a. hastening to devour. **TI'GRESS**, n. *-grēs*, a female tiger. **TI'GRINE**, a. *-grīn*, resembling a tiger; feline. **TIGER-SHELL**, one of the cowrie-shells—so called from its spots.

TIGER.

TIGER (*Felis tigris*): one of the largest of the *Felidæ*, equal perhaps to the lion in size and strength, and superior in activity. It has no mane. It is more slender than the lion, its whole form more cat-like, its head smaller and rounder. All its motions are performed with utmost grace and apparent ease. It does not climb trees, but winds its way through brush-wood or jungle with great dexterity, runs very swiftly, and can leap an immense distance. It takes its prey either by running, or, more frequently, by lying in ambush and leaping upon it. Its strength is such that it is capable of carrying off an ox or buffalo. It is sometimes 15 ft. in entire length to the tip of the tail; an instance is on record of 18 ft.; the height is 3 to 4 ft. The tigers of some regions differ considerably in size from those of others: thus the T. of Bengal is much larger than that of Bokhara. The hair is thick, fine, and shining; in the colder countries which the T. inhabits, it is thicker and longer than in tropical regions. The color is a bright tawny yellow, beautifully marked with dark transverse bands, passing into pure white on the under parts; the dark bands are continued as rings on the tail. The tail is long, slightly tapering, clothed with hair similar to that of the body. Individuals sometimes occur of pale whitish color, obscurely striped, the stripes visible only in particular lights. The T. is found only in Asia. It abounds in Hindustan, in the E. Peninsula, in Java, Sumatra, and other tropical islands. It is found also in China and Japan, and in Persia. Its range, however, does not extend much w. of a line drawn from the mouth of the Indus to the Caspian Sea. It is found as far n. as s. Siberia, and even on the banks of the Obi. It inhabits woods, and cannot exist without free access to water. The islands of the delta of the Ganges have long been noted as a haunt of tigers. The T. generally lies concealed in a thicket during the day, and seeks its prey by night. The prey is very often obtained by watching near the places to which animals resort for drinking. Tigers prowl about villages, and enter cattle-folds; they also follow travelling parties, and seize the yoke-oxen and buffaloes, particularly those which straggle away from the encampment at night. The ravages of tigers in some parts of the E. Indies are very great; and a great number of human beings are destroyed by them. A notion prevails that a T. which has once tasted human flesh becomes eager for it, and prefers it to all other food; and a single T. has been known to kill and devour many people, watching near some frequented path, or prowling around a village. The truth appears to be that this is the mode of obtaining prey to which a T. sometimes resorts when incapable, through old age, of the active exertion necessary for capturing buffaloes or deer. The T. brings forth three, four, or five young ones at a birth. When taken young, it is easily tamed, and often shows much affection for those who treat it kindly. Tame tigers are frequently seen in India.

The T. was less familiarly known to the ancients than the large African *Felidæ*. It is, however, mentioned by

TIGER-CAT.

Aristotle, and it is frequently mentioned by the Latin poets. Pliny tells us that the first T. seen at Rome was a tame one belonging to Augustus.

The T. frequently breeds in captivity, but not so frequently as the lion. A hybrid between the lion and T., the offspring of the male lion and the tigress, has been sometimes produced in menageries: it is striped like the T., and not maned. None of the hybrid cubs have lived long.

Tiger-hunting is a favorite Indian sport, exciting because somewhat dangerous. Europeans generally ride on elephants when engaged in it, and the T. is shot from the back of the elephant. Natives, however, are employed to beat the wood or jungle for the T., and lives are often lost in this way. During the decade 1870-80, more than 800 persons and 16,000 cattle were killed in some years by tigers; while 16,000 tigers were slain by native hunters (about £4,000 being paid for rewards), without reckoning those killed by British sportsmen. Tigers are now less numerous than formerly. Many expedients are adopted for their destruction in the countries infested by them. Bows with poisoned arrows are fixed in their paths, so as to be discharged on being touched. Heavy beams are so placed as to fall upon the T. pressing against a rope, and to crush the animal by their weight. Traps of various kinds are set, sometimes baited with a live goat or other small animal. The Chinese use a box-trap with a looking-glass in it, and the T., attracted by his own image, disengages the fastening of the lid, and is captured: this method is represented in ancient sculpture. A very curious mode, practiced in Oude, consists in scattering numbers of broad leaves smeared with a substance like bird-lime in the tiger's path, and if he sets foot on a smeared leaf his fate may be regarded as sealed. He rubs his paw on his face, to get quit of the leaf, and the case becomes worse—the leaves are transferred to his face; fresh attempts to remove the nuisance only add more leaves, till he becomes blinded, and rolls on the ground in rage; while the hunters, ambushed close by, apprised by his howlings, hasten to dispatch him.

The T. is an emblem of power in the East. A tiger's head, gorgeously adorned with jewels, decorated the throne of Hyder Ali and Tippoo Sahib, and was among the spoils taken by the British at Seringapatam.

TIGER-CAT: name often given to some of the *Felidæ* of middle size, which resemble the tiger in form or markings. The Ocelots (q.v.) and the Serval (q.v.) sometimes receive this not very definite name. The CHATI (*Felis mitis*) is a tiger-cat of S. America, rather more than two ft. in length, exclusive of the tail, which is about 11 inches. The color is yellowish, with irregular dark patches, those on the back forming four longitudinal rows; the markings, indeed, more leopard-like than tiger-like. The chati prowls by night, and often carries away poultry from their roosting-places. Almost all tropical and sub-tropical countries have their tiger-cats. Several species are found in the E. Indies.

TIGER-FLOWER—TIGRIS.

TIGER-FLOWER (*Tigridia pavonia*): plant of nat. order *Iridaceæ*, the only known species of its genus, distinguished by the three outer segments of the perianth being larger, and by the filaments being united into a long cylinder. It is a native of Mexico; but hardy enough to endure the climate of more northern countries, and much cultivated in flower-gardens for the singularity and beauty of its flowers, which are, however, very evanescent. The root is a scaly bulb.

TIGHT, a. *tīt* [Icel. *thettr*; Dan. *tæt*; Sw. *tät*, stanch, tight: Ger. *dicht*, solid, thick]: not loose or slack; taut; compact; close in texture or structure; especially, so close as to be impervious to air, gas, rain, water, etc.; not leaky; sitting very close to the body, as clothes; ill supplied or stringent, as the money-market; in *slang*, drunk; tipsy; in *OE.*, handy; adroit. **TIGHT'LY**, ad. *-lī*, not loosely; closely; in *OE.*, not idly; briskly; cleverly. **TIGHT'NESS**, n. *-nēs*, the quality or condition of being tight; closeness; compactness; stringency; in *slang*, tipsiness; in *OE.*, cleverness; neatness; adroitness. **TIGHTEN**, v. *tīt'n*, to draw or make tight or tighter; to straiten; to make close or closer. **TIGHTENING**, imp. *tīt'nīng*. **TIGHTENED**, pp. *tīt'nd*. **TIGHTENER**, n. *tīt'nēr*, that which tightens. **TIGHTS**, n. plu. *tīts*, tight-fitting trousers or leggings; part of the stage-dress of a dancer or performer. **TIGHT-ROPE**, a rope suspended above the earth and tightened, on which acrobats dance and perform other feats.

TIGRANES, *tī-grā'nēz*, **THE GREAT**, King of Armenia: B.C. 96-55: conqueror of Mesopotamia and parts of Assyria and Media, also of parts of Asia Minor and Syria. Having been involved in a war with the Romans, he was defeated first by the consul Lucullus—who sacked the capital of the Armenian kingdom, Tigranocerta—and then by Pompey the Great, who exacted of T. an enormous sum of money as the price of being permitted to reign in Armenia proper.

TIGRIS, *tī'grīs* (Heb. *Hiddekel*; i.e., the 'Dekel,' equivalent to *Digla* or *Diglath*, probably a Semitic corruption of *Tigra*, Medo-Persic for an arrow; hence Gr. *Tigris*, the 'arrowy' stream): large river of Asiatic Turkey, rising s. of Lake Goljik, in the mountains of Kurdistan, within a few miles of the e. bend of the Euphrates (q.v.). It flows s.e. to Diarbekir, then, turning sharply, flows due e. for 100 m. to Til. Here it receives from the n. a considerable affluent, the Bitlis, and, changing its course, flows s.e. through desert wastes to the Persian Gulf, after a course estimated at 1,150 miles. Its chief tributaries, besides the Bitlis, are the Great and Little Zab, and the Dyala, all from the left, the waste land between it and the Euphrates (ancient Mesopotamia) not furnishing a single stream. At Kurna it joins the Euphrates, about 70 m. above the mouth of that river in the Persian Gulf, and the united rivers bear the name Shat-el-Arab (see **EUPHRATES**). In the upper part of its course, the T. is very swift, whence probably its name, and it brings down great quantities of mud. It is navigable for light freight-steamers to Bag-

TIKA—TILDEN.

dad; and above that point, for light rude boats and rafts to Diarbekir. The principal places on its banks are Diarbekir, Mosul, and Bagdad, with the ruins of Nineveh, Seleucia, and Otesiphon.

TIKA, n. *tī'kă* [Skr.]: a mark which the Hindus make on their foreheads with the yellow dye obtained from *Euonymus tingers*, ord. *Celastracæ*.

TIKE, n. *tīk* [Sw. *tik*; Icel. *tík*, a bitch]: a dog; a cur; a selfish snarling fellow; a vulgar person; a rustic.

TILBURG, *tīl'bērg*, or **TILBORG**, *tīl'borg*: flourishing trading and manufacturing town in the Netherlands, province of N. Brabant, 13 m. e.s.e. of Breda. The town is mentioned as early as 709; but its prosperity began with King William II., when Prince of Orange and commander of the army, taking up his headquarters at T., during the long contest which ended in the independence of Belgium. Much heath has been converted into arable and pasture lands, and numerous brick-works and woollen-cloth factories have arisen. In 1877 there were about 40 wool-spinning works with steam-power in and about T., employing about 6,000 persons. The workmen's houses have each a strip of land attached for a garden. Principal industries are weaving woollen cloth, spinning, finishing and dyeing woollen fabrics, making soap, salt, tiles, bricks, and beer. The chief buildings are the new palace, the town-house, the barracks, and the cloth-hall. T. has a high school with a course of five years, a drawing-school, and several charitable institutions. The people are nearly all Rom. Catholics.—Pop. (1879) town proper about 5,500. commune 28,390; (1887) commune 32,016; (1901) 42,334.

TILBURY, n. *tīl'bēr-ī*: a kind of carriage open at the top, named after the original maker.

TILBURY FORT, *tīl'bēr-ī*: fortification in Essex, England; on the n. bank of the Thames, opposite Gravesend; erected in the time of Henry VIII. as a block-house, and converted (1637) into a regular fortification, of rectangular form, chiefly of brick. Its batteries command the river and the reach below.

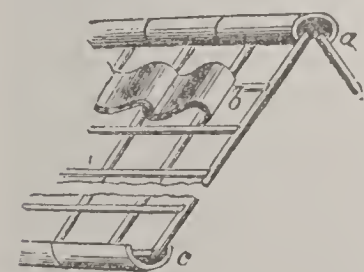
TILDE, n. *tīl'dā* [Sp.]: a mark (~) placed over the *n* in Spanish words to indicate that the vowel following is to be pronounced as if *y* preceded it, as *señor* = *sān'yōr*.

TILDEN, *tīl'dēn*, SAMUEL JONES: statesman: 1814, Feb. 9—1886, Aug. 4; b. New Lebanon, N. Y. He entered Yale Coll. at the age of 18 years, having already won the honor of having a political address written by him adopted by the democrats as a party manifesto. He completed his college studies in the Univ. of New York, studied law, and was admitted to the bar; was elected member of the assembly 1845: as chairman of a committee to investigate the anti-rent troubles, he prepared a masterly report on leasehold and leasehold tenants. He sat in the constitutional convention of 1846. Of his law cases the most notable were that of the contested election of Azariah C. Flagg as comptroller of N. Y. city; that of the administration of the estate of Dr. Burdell (who was alleged to have

TILE.

been murdered by a Mrs. Cunningham: T. defended the estate against Cunningham's application for letters of administration); and the defense of the Penn. Coal Co. in the suit of the Delaware and Hudson Canal Co. for recovery of extra tolls. Thereafter, T. was at one time or another counsel for one-half the railroads of the country. He was with the free-soil bolters 1848; was candidate of the 'soft-shell' faction of the democratic party for the state attorney-generalship 1855; throughout the war maintained the sufficiency of constitutional measures for the overthrow of the rebellion. In 1868 he was the acknowledged leader of his party in the state. As leader, he strenuously opposed (1870) the enactment of the 'Tweed charter' for New York, whereby the fortunes of the city were put in the hands of a corrupt cabal. He brought about the impeachment of Judges Barnard and Cardozo, and procured their deposition from the judicial bench. He pursued the 'Tweed ring' in New York to its downfall and the conviction or voluntary exile of its chiefs. Elected gov. 1874, by a plurality of 50,000 votes over the republican candidate, he again relentlessly pursued public plunderers, the offenders in this case being the 'canal ring' of the state. At the presidential election 1876, Nov., T., as the democratic candidate, got 4,284,265 votes; his republican opponent, Rutherford B. Hayes (q.v.), 4,033,295. But the democratic house of representatives and the republican senate being irreconcilably at variance as to the electors chosen, a compromise was arranged whereby a commission of 15—5 senators, 5 representatives, and 5 supreme-court justices—was created to determine the issue. The decision reached by a majority (8) of the commission was in favor of Hayes: see ELECTORAL COMMISSION. By his last will, T. left nearly his entire estate (variously estimated \$5,000,000 to \$8,000,000) to trustees, to be used in founding in New York a free public library. But the will was declared invalid by the courts of the state, and only a portion of the estate went to the object designated.

TILE, n. *tīl* [AS. *tigele*; Ger. *ziegel*; F. *tuile*, a tile; L. *tegula*, a tile—from L. *tegĕrĕ*, to cover]: a plate or thin slab of burnt clay, flat or round, or of other form, used for roofing and for floors, walls, etc.—the finer kinds of paving-



a, Ridge-tile; b, Pan-tile;
c, Gutter-tile.

tiles are known as Encaustic Tiles (q.v.: see also MOSAIC); in *slang*, a hat: V. to cover with tiles, or as with them; in the language of *freemasonry*, to secure the door of a lodge against the entrance of the uninitiated. **TIL'ING**, imp.: N. act of covering with tiles; tiles collectively. **TILED**, pp. *tīld*: ADJ. covered with tiles; in *slang*, bound or required to keep a matter secret.

TILER, n. *tīl'ēr*, a man whose occupation is to cover buildings with tiles; a brother who covers or seals the door on the outside at a lodge of freemasons—usually spelled *tyler*.

TILERY, n. *-ēr-ĭ*, a work where tiles are made. **TILE**,

TILESTONES—TILL.

EARTH, clay suitable for making tiles. **TILE-ORE**, a variety of red oxide of copper, occurring massive or incrusting. **DRAIN-TILES**, or **DRAINING-TILES** (see **PIPES**).

TILE-STONES: uppermost group of the Silurian period, consisting of a reddish, thin-bedded, slightly micaceous sandstone, which in some places attains a thickness of 1,000 ft.; so called because capable of being split into thin layers suitable for roofing. The beds were originally considered as of Old Red Sandstone age; then as a transition group, from the Silurian strata to the Old Red Sandstone; but it is now ascertained that the fossils agree in great part specifically, and in general character entirely, with those of the underlying Upper Ludlow Rocks, and they are accordingly considered the newest group of the Upper Silurian.

TILGHMAN, *tĭl'man*, **TENCH**: soldier: 1744, Dec. 25—1786, Apr. 18; b. Talbot co., Md. At the outbreak of the revolution he was a merchant in Philadelphia, but was appointed lieut. of a company of light infantry; and was sec. and aide to Gen. Washington, from 1776 till the end of the war. He bore to congress Washington's dispatch announcing the surrender of Cornwallis. Congress voted him a sword and a horse with accoutrements. He was commissioned lieut.col. 1781, the rank to date from 1777, Apr. 1. After the war he was a merchant in Baltimore.

TILIACEÆ, *tĭl-ĭ-ă'sē-ē*: natural order of exogenous plants, of which nearly 400 species are known, mostly trees and shrubs, with a few herbaceous plants; mostly natives of the tropics, though a few are found in temperate parts of the n. hemisphere. They have simple, alternate leaves with stipules, and axillary flowers. The calyx is usually of four or five sepals; the corolla, of four or five petals. The corolla is sometimes lacking. The stamens are generally numerous, hypogynous, distinct; the outer ones sometimes abortive and petal-like. The ovary is composed of 2-10 carpels; there is one style, and the stigmas are equal in number to the carpels. As the characters somewhat correspond with those of *Malvaceæ*, so do the properties of the order, which are generally mucilaginous and wholesome, the bark fibrous. Some yield a light and useful timber, e.g., the Lime (q.v.) or Linden tree, a well-known European representative of the order, the Amer. Linden or Basswood, the White Linden of the Alleghanies, the Halraalillo (q.v.) of Ceylon, the *Grewia elastica* of India, and the *Luchia divaricata* of Brazil. The bast of the lime-tree is valuable from its fibrous character; that of the species of *Grewia* is used in the same way in India, and that of all the species of *Apeiba* in S. America. The most important fibrous plants of the order, however, are the species of *Corchorus* (q.v.), which yield Jute (q.v.).

TILL, conj. *tĭl*, or **UNTIL**, conj. *ăn-tĭl'* [Icel. *tĭl*, till—allied to Ger. *ziel*; OHG. *zil*, a bound, a limit]: to the time when, as, I shall wait *till* you arrive: **PREP.** to the time of; to the time, as *till* to-morrow; up (or down) to; as far as. **TILL NOW**, to the present time. **TILL THEN**, to some future time fixed on.

TILL—TILLEMONT.

TILL, *n.* *tĭl* [Dut. *tillen*, to lift, to move: or perhaps from Eng. *tell*, to count]: a drawer or tray in a chest or trunk; a drawer in a desk or counter; a money-box.

TILL, *v.* *tĭl* [the primary meaning would seem to be 'to aim at excellence:'] Ger. *zielen*, to aim at—from *ziel*, an aim: AS. *tilian*, to direct one's efforts to a purpose, to labor: Dut. *telen*, to cultivate]: to prepare land for seed and to raise and dress crops; to cultivate: *N.* [Scot. *till*, a cold unproductive clay] a Scotch and geological term for the stiff unstratified clays of the boulder formation, but loosely applied to any thick unstratified alluvia (see **BOULDER-CLAY**: **PLEISTOCENE**). **TILL'ING**, *imp.*: *N.* culture; tillage. **TILLED**, *pp.* *tĭld*. **TILLER**, *n.* *tĭl'ĕr*, one who tills. **TIL'ABLE**, *a.* *-lă-bl*, capable of being tilled; arable. **TIL'AGE**, *n.* *-lăj*, the art or practice of preparing land for seed and raising crops; culture. **TILTH**, *n.* *tĭlth*, cultivated land; culture; the surface soil turned over by the plow, in which the crops root. **TILLY**, *a.* *tĭl'ĭ*, having the character of till or cold unproductive clay.—**SYN.** of 'tillage': husbandry; farming; agriculture; culture; cultivation.

TILLAND'SIA: see **BROMELIACEÆ**.

TILLEMONT, *tĕ-yĕh-mōng'*, **SÉBASTIEN LE NAIN DE**: ecclesiastical historian: 1637, Nov. 30—1698, Jan. 28; b. Paris; son of Jean le Nain—the title *De T.* being derived from a small estate of his family, near Vincennes. He was educated at Port Royal, where he early imbibed serious and rigorous views of the spiritual life. His theological studies from his youth were marked by a spirit of patient and thorough inquiry into the writings of the Fathers, especially of the apostolic Fathers. With scrupulous conscientiousness, he hesitated long in the choice of a profession; but at last was ordained deacon 1673, and priest 1676. He was at his estate of Tillemont 1679–81, then visited Arnauld and the other Jansenist refugees in Holland and the Low Countries. He was induced 1682 to undertake a parochial charge—St. Lambert—but held it only a short time.

During these years, he had been steadily pursuing his historical studies and preparing his great Church History. Being under suspicion from his Jansenist sympathies, he divided his work, and was thus enabled to print the first part without referring it to the censorship, under the title *Histoire des Empereurs* (6 vols. 4to 1690). The success of this work disarmed the opposition of the church authorities; and eventually his Church History appeared under the title *Mémoires pour servir à l'Histoire Ecclésiastique des six Premiers Siècles*, 16 vols. 4to (1693–1712), the last 12 vols. after his death. The *Emperors* comprises all the reigns from Augustus to Anastasius (518); the *Histoire Ecclésiastique* comes down to about the same period. The plan of both is much the same, being in great part a compilation of the original writers, as far as possible in their own words, but arranged with great skill and judgment, and with such explanations and chain of narrative (within brackets) as is requisite for a connected recital. Both these monumental works have maintained to this day their reputation for learning and impartiality. His other works in manuscript

TILLER--TILLOTSON

were largely used as materials by later compilers; indeed, his authorities have largely supplied materials for the church histories compiled since his time.—T. died at Paris.

TILLER, n. *tîl'ler* [Dut. *tillen*, to lift]: the bar or lever by which the rudder of a vessel is worked (see **HELM**); in *prov. Eng.*, the handle of a spade; in *OE.*, the stalk of a cross-bar. **TILLER-ROPE**, the rope which forms the communication or connection between the rudder and the wheel.

TILLER, v. *tîl'ler* [AS. *tilga*; Dut. *telghe*, a branch, a shoot]: to send up a number of new shoots from a root. **TIL'LERING**, imp. **TIL'LERED**, pp. *-lêrd*. **TIL'LERS**, n. plu. *-lêrz*, shoots or sprouts springing from a root or stump; the young trees left to stand when a wood is felled.

TILLMAN, BENJAMIN RYAN. politician 1847, Aug. 11— ———; b. Edgefield, S.C. He studied at an acad., and worked on his father's farm. In the civil war he fought on the confederate side. In 1890 he was elected Dem. gov. of S.C., and again in 1892. He is the originator of the dispensary system of selling alcoholic beverages in S. C. (q.v.), and while he was governor demanded strict enforcement of the dispensary law. He was elected to the U. S. senate 1895 and 1901. In 1902, during the discussion of the Philippines Tariff Bill he had a personal encounter with his colleague McLaurin, and both were censured by the senate.

TILLOTSON, *tîl'ot-son*, JOHN, D.D., Archbishop of Canterbury: 1630, Oct.—1694, Nov. 24; b. Sowerby, Yorkshire; son of a zealous Puritan, a clothier. During his course at Cambridge he had the friendship of Cudworth, More, Rust, Smith, Wilkins, and other scholars. In 1656 he became private tutor in the house of Edmund Prideaux, of Ford Abbey, Devonshire, Oliver Cromwell's attorney-general. When or by whom T. was ordained, is not known, but he was a preacher 1661—attached apparently to the Presb. party in the Church of England, for at the famous Savoy Conference (q.v.) he was present on the Presb. side; but he submitted at once to the Act of Uniformity (1662); and in 1663 he was appointed to the rectory of Kedington in Suffolk; but almost immediately after was chosen preacher at Lincoln's Inn, where his mildly evangelical, earnestly practical, but *undoctinal* morality was at first little relished: 'Since Mr. Tillotson came,' said the benchers, 'Jesus Christ has not been preached among us.' Soon, however, the graces of his character manifested themselves, and his popularity increased, especially when it was found that, though not a Puritan, he was nevertheless averse to atheism and popery. His sermons were characterized by an indefinable tact; and he became the most admired preacher of his day. In 1664 he published a sermon *On the Wisdom of Being Religious*; and 1666 *The Rule of Faith*, in reply to a work by an English clergyman, Sargeant, who had gone over to the Church of Rome. In 1670 he was made a prebend of Canterbury. Two years later he was promoted to a deanery; and 1680 pub. a sermon, *The Protestant Religion Vindicated from the Charge of Singularity and Novelty*, in which he advanced the proposition—*untenable by a Protestant*—that 'no man is at liberty to

affront (i.e., to attack) the established religion of a nation, though it be false. This proposition he subsequently abandoned. With Burnet, he attended Lord Russell during his imprisonment for complicity in the Ryehouse Plot; and on the accession of William III. rose high into favor. In 1689 he was appointed clerk of the closet to the king; and 1691 was raised to the see of Canterbury, vacant by deposition of Sancroft (q.v.), after vainly imploring William to spare him an honor which he foreboded would bring him no peace. Nor was he mistaken in his painful presentiment. The non-juring party (see NON-JUROR) pursued him with unrelenting rage to the end of his life—three years later; but their animosity extracted neither murmur of complaint nor retaliation from the tolerant primate. A collected ed. of his *Sermons* was published after his death by his chaplain, Dr. Barker, and has been frequently reprinted; the best ed. is by Birch, 10 vols. 1820. They were translated into German by Mosheim; and were long highly popular for their clear, solid, and refined thought, their easy eloquence, their evident candor, their humane and moral piety. T.'s life was written by Dr. T. Birch (Lond. 1752).

TILLY, *tillē*, JOHANN TSERCLAES, Count of: one of the greatest captains of the 17th c.: 1559, Feb.—1632, Apr.; b. at the chateau of Tilly in Brabant. A pupil of the Jesuits, and intended for the priesthood, his natural sternness inclined him to enter fully into their extreme ideas; and this bent of mind was fixed by the examples of Alba (q.v.) and Requesens, under whom—having decided on the life of a soldier—he was initiated into the art of war in the Low Countries. After distinguished service in Hungary against the Turks, he was appointed 1609 by Duke Maximilian of Bavaria to reorganize his army, but resigned this post to take command of the Rom. Cath. army at the outbreak of the Thirty Years' War (q.v.); and with Duke Maximilian gained 1620 the battle of Prague, which dissipated the ambitious dreams of the elector palatine. During this war, he separated, by able strategy, the armies of Mansfeld and of the Markgraf of Baden, beat the latter at Wimpfen, and expelled Christian of Brunswick from the Palatinate 1622, defeating him at Höchst 1622, and at Stadion 1623—the latter desperate conflict lasting three days. Created a count of the empire, he was next opposed to the king of Denmark, whom he conquered at Lutter 1626, and, in conjunction with Wallenstein, compelled to sign the shameful treaty of Lübeck 1629. In 1630 he succeeded Wallenstein as commander-in-chief of the imperial forces, and took by storm the town of Magdeburg 1631, May 10. The frightful atrocities which he allowed the Croats and Walloons of his army to perpetrate on this occasion have affixed to his otherwise high reputation a foul blot, ineffaceable by apology. May 14 he made a solemn entry into the ruined city, attended the celebration of a *Te Deum* in the cathedral, and then sent to the emperor a dispatch in which occurs the passage: 'Since the capture of Troy, and the destruction of Jerusalem, a victory such as this has never been seen!' From this time, fortune deserted him; for his next

TILLY VALLY—TILSIT.

opponent was Gustavus Adolphus, for whom T. was no match, and who completely routed him at Breitenfeld 1631, Sep. 17; and though, in the following spring, he gained minor successes over the Swedish general Horn, the king speedily drove him behind the Lech in Bavaria, and (Apr. 5) forced the passage of the river right in his front, after a desperate conflict, in which T. was mortally wounded. He was removed to Ingolstadt, where he died. T. was victor in 36 battles, and was reckoned the best general of the time till his defeat by the Swedish king: he was small in stature, and of meagre habit of body, with a stern and energetic countenance. Sober and continent, a despiser of luxury and wealth, of such simplicity of character that he refused the emperor's offer to make him a prince, he supported the Rom. Cath. party entirely from a sincere devotion, and with a fanatical zeal.

TILLY-VALLY, *tîl'li-vă'll'li* [perhaps a hunting phrase borrowed from the French: Steevens derives it from *L. titi, villitium*, a very small trifle, a bagatelle: the etymology is quite uncertain]: in *OE.*, an interjectional phrase expressive of contempt for trifling or impertinent observations; bosh; nonsense; also spelled **TILLY-FALLY**.

TIL'-SEED: see **SESAMUM**.

TILSIT, *tîl'sî't*: commercial town of Prussia, province of Prussia, on the left bank of the Memel or Niemen, 60 m. n.e. of Königsberg; in a fruitful district, called the T. Flat. It has broad streets and a cleanly appearance. Its castle and town-hall are the chief buildings. It has active transit-trade with Russia, besides considerable trade in timber, corn, butter, cheese, and Russian products; and has paper, sugar, and oil mills. T. is memorable for the treaties there signed 1807, between France and Russia July 7, and France and Prussia July 9; constituting the Peace of Tilsit. By the treaty of July 7, Napoleon agreed to restore to the king of Prussia a great portion of his dominions, his Polish acquisitions being joined to Saxony (see **POLAND**), and his possessions w. of the Elbe formed into the nucleus of the new kingdom of Westphalia: moreover, Danzig was declared an independent city; the Prussian province of Bialystok was ceded to Russia; the dukes of Oldenburg and Mecklenburg, the czar's relatives, were reinstated by Napoleon, and, in return, the Bonapartist kings of Naples and Holland were recognized by the czar; etc.—By the treaty of July 9, the king of Prussia recognized the kings of Holland, Naples, and Westphalia, and the Confederation of the Rhine; and agreed to the cessions laid down in the Russian treaty, and to other minor alienations and concessions to Saxony, amounting in all to nearly one-half of his dominions; to the exclusion from his harbors of the commerce of Great Britain, and to the occupation of the Prussian fortresses by the French, till the payment of an enormous ransom. The importance of the alterations effected by this treaty—though its provisions register the depth of Prussia's degradation by Napoleon—is dwarfed before the startling magnitude of the *secret provisions* signed between France and Russia. By these were arranged the resigning of the em-

TILT—TILTON.

pire of the East to Russia—Roumelia and Constantinople being specially excepted by Napoleon—and the acquisition of the Spanish peninsula by France; the two powers were to make common cause against Great Britain, and were to force the three courts of Stockholm, Copenhagen, and Lisbon to join them; and Napoleon agreed to increase no further the power of the duchy of Warsaw, and to do nothing which might lead to re-establishment of the Polish monarchy. By a further agreement, not put formally into writing, the mouths of the Cattaro, the Ionian Isles, Sicily, Malta, Egypt, and the papal dominions were to be taken by France; and Greece, Macedonia, Dalmatia, and the Adriatic coasts, on the partition of Turkey; while, on the other hand, Russia was to obtain the rest of Turkey, and was allowed to seize Finland. These secret articles are given on excellent authority, and their correctness is further evinced by the conduct of France and Russia for the next few years Pop. (1885) 22,422; (1890) 24,545.

TILT, *v. tilt* [AS. *tealt*, unsteady, tottering: Icel. *tölta*, to tilt: Sw. *tulta*, to waddle]: to ride at each other with blunt lances; to joust; to fight; to rush, as in combat; to fall or lean, as to one side; to throw to one side; to incline; to place in a sloping position: N. inclination forward, backward, or to one side; a sloping position; an exercise in which mounted combatants charge at each other or at a target with blunt lances; a thrust. **TILTING**, *imp.*: N. inclination forward; the act of one who or that which tilts, as in a trial of arms or as a disputant; formerly, a military pageant in which combatants on horseback assailed each other with couched or levelled lances; the process by which blistered steel is rendered ductile. **TILT'ED**, *pp.*: ADJ. levelled, as in a tilting-match; raised up on end or edge. **TILT'ER**, *n. -er*, one who tilts. **TILTED UP**, in *geol.*, thrown up or inclined at a high angle. **TILT-HAMMER**, a large hammer set in motion by machinery, and lifted or tilted by projections or wipers on the axis of a wheel, used in the manufacture of iron and steel. **TILT-YARD**, an inclosed space for tilts or tournaments.

TILT, *n. tilt* [Icel. *tjald*, a tent, a curtain: Dan. *telt*; Sw. *tält*; Ger. *zelt*, a tent: Sp. *tolda*, an awning]: a covering overhead; the canvas covering of a cart or wagon; an awning of canvas extended over the stern-sheets of a boat: V. to cover with an awning. **TILT-WAGON**, a covered wagon.

TILTH: see under **TILL** 3.

TILTON, *tíl'ton*, JAMES, M.D.: physician: 1745, June 1—1822, May 14; b. Kent co., Del. He was educated at the Nottingham, Md., Seminary; graduated in medicine at the Univ. of Penn. 1776, and began practice, but at the outbreak of the revolution entered the military service as lieut. Soon he was appointed surgeon of a Del. regt., and was in the battles of Long Island and White Plains, and in the retreat to the Delaware. By his exertions the army medical and hospital service was much improved. He was made surgeon-gen. of the army 1812, and personally inspected the hospitals on the n. frontier,

TILTON—TIMBER TREES.

TIL'TON, THEODORE: editor and author: b. New York, 1835, Oct. 2. He graduated at the Coll. of the City of New York 1855; was asst. ed. of the *N. Y. Observer*, and 1856-71 connected with the *N. Y. Independent*, of which he was for a while ed.-in-chief. Subsequently he began and for two years conducted the *Golden Age*. For many years he was a lyceum-lecturer. His name became notorious by his connection with the scandalous charges brought against Henry Ward Beecher. Among his writings were: *The Sexton's Tale and Other Poems* (1867); *Sancta Sanctorum, or Proof Sheets from an Editor's Table* (1869); *Tempest Tossed*, a romance (1873); *Thou and I*, poems (1880); *Suabian Stories*, ballads (1882); *The True Church* (1883).

TIMBAL, n. *tīm'bāl* [F. *timbale*; Sp. *timbal*; It. *timballo*, a kettle-drum—from Ar. *tabl*]: a kind of kettle drum: one of certain species of insects which make noises by the rapid movements of folded membranes (called *timbales*, *tīm'bāl-ēz*) in a cavity on the under part of the abdomen.

TIMBER, n. *tīm'ber* [AS. *timber*, building material. Goth. *timrjan*, to build: Ger. *zimmer*, building material. Dut. *timmer*, all materials of a building: Icel. *timbr*; Dan. *tømmer*, wood for building]: wood fit for building purposes (see **TIMBER TREES**); the trunk of a tree; the main beams of a building; one of the upright pieces of a ship's frame: **ADJ.** furnishing timber; made of or used for timber: **V.** to furnish with timber. **TIM'BERING**, imp.: **N.** timber materials. **TIM'BERED**, pp. *-bērd*: **ADJ.** furnished with timber; wooded. **TIM'BERS**, n. plu. *-bērz*, the upright ribs, based on the keel and rising to the gunwale, on which the planking of a vessel is fastened (see **SHIP-BUILDING**). **TIMBER-HEAD**, in a *ship*, the top end of a timber rising above the gunwale. **TIMBER-TREE**, tree whose wood is fit for use as timber. **TIMBER-WORK**, work made of timber or wood. **TIMBER-YARD**, a place where timber is kept; a lumber-yard.

TIMBER TREES: trees valuable for their timber, which is used for construction. They belong to many widely different nat. orders, all, however, orders of Phanerogamous plants; the only Cryptogamous plants which assume the form of trees being the Tree Ferns (q.v.). Of Endogenous plants, the only timber-trees are some of the Palms (q.v.); the only other endogens, indeed, which can be called trees being a very few of the *Liliaceæ*, e.g., the Dragon-tree (see **DRAGON'S BLOOD**). Of Gymnogens, the *Coniferae* are in general of considerable value for timber, and some, e.g., the different kinds of Fir and Pine, are largely used for building purposes. A far greater number of timber-trees, however, are true exogens—as the Oak, Ash, Elm, Birch, Maple, Poplar, Whitewood, Beech, Catalpa, Cedar, Chestnut, and Walnut, among those of temperate regions; and the Mahogany, Rosewood, and Teak, of tropical countries. The most valuable timber trees of different countries are noted in the articles on these countries; for trees belonging to particular nat. orders, see the titles of these orders: the most valuable kinds are described in separate articles. For the cultivation of timber trees, see **AR-**

TIMBRE—TIMBUKTU.

BORICULTURE. Some trees of comparatively small size are valuable for the quality of their timber, which is used for veneering, turnery, or for wood-engraving. Others, as the apple and cherry, which are valuable principally for production of fruit, are useful also for timber; the former being used for making weavers' shuttles, and the latter for making furniture.

Timber-trees, in Law, such trees as are used in building and in the mechanic arts—e.g., oak, ash, elm, beech, chestnut, walnut, cedar, fir, lime, aspen, sycamore, birch. As a general rule, T.-T., whether standing or fallen, are part of the realty of an estate, and are embraced in a mortgage of the land; they pass to the purchaser in a judicial sale under a mortgage. But local conditions modify the operation of the principles of law: thus, in a new country abounding in forest, the removal of the standing timber, so far from being a damage, may be esteemed rather a benefit. See **WASTE**.

TIMBRE, n., or **TIMBER**, n. *tĭm'bĕr*. [F. *timbre*, a clock-bell, crest—from L. *tympānum*, a drum, a timbrel]: the crest on a coat of arms; in *music*, the characteristic quality of sounds of the same pitch and loudness when produced by two different instruments or voices, by which they are distinguished from each other.

TIMBREL, n. *tĭm'brĕl* [Sp. *tamboril*, a drum; *timbal*, a kettle-drum (see **TABOR**)]: small drum, like a tambourine, having bells round the rim. **TIM'BRELLED**, a. *-brĕld*, sung to the sound of the timbrel.

TIMBUKTU, or **TIMBUCTOO**, *tĭm-bŭk'tô*: famous city of Sudan, on the s. verge of the desert of Sahara; lat. 18° 4' n., long. 1° 45' w.; in a position of commercial importance, on the left of the great n.w. bend of the Niger, and at the confluence of the branches of the Joliba (Upper Niger). It stands only a few feet above the level of the Niger, 800 ft. above sea-level; is triangular in shape, 2½ to 3 m. in circumference, and at present without walls; though in former times it had much greater area, with walls. It is laid out mostly in straight, partly in winding, streets of hard sand and gravel, with a sort of gutter in the middle. There are three chief squares. There are about 980 clay houses—mostly mean and low, and a few houses of two stories, and having some architectural adornment—and about 200 huts of matting. In the n. part is the mosque of Sankoré, an edifice whose grandeur gives character to the district in which it stands: other chief buildings are the 'Great Mosque,' an immense and stately edifice, 286 ft. long, 212 ft. wide; and a few other mosques. The climate is not very healthful. T. is not a manufacturing town, almost the whole life of the city being based upon foreign commerce, for which its situation singularly adapts it—being at the converging-point of the main trade-routes from the Gulf of Guinea and from the Mediterranean across the w. Sahara. The quantity of grain raised here is much too small for local supply, and almost all the victuals used are imported by water-carriage from Sansanding, on the Upper Niger. The only manufactures are blacksmiths'

TIME.

work, and articles in leather, especially luggage-bags, cushions, tobacco-pouches, and gun-covers. Most of the clothing sold here is imported from Kano, Sansanding, and England. There are three great highways for foreign commerce to the city of T.—down the river from the s.w., and by two roads from the n., from Morocco and Ghadames respectively. Of this commerce, the staple is gold, which arrives at this place chiefly in the form of rings; and the export of it is set down at about \$100,000 yearly. Salt and the kola-nut, which is used in place of coffee (see TEA), are largely imported and re-exported, as are also tobacco and dates. Rice and grain are brought from Sansanding; Eng. manufactures—red cloth, sashes, looking-glasses, cutlery, and calico—arrive from the n. and n.w. The people are a motley group, and the local govt. is controlled by a neighboring Tuareg chief. Since 1884 relations have been established with the French on the Upper Niger. T. was founded about the end of the 11th c., and first became known to Europeans in 1373. It was little visited before 1880. It was occupied by a French garrison, 1894, Jan.—Pop. (1853) estimated by Barth 11,000; (1880) estimated by Lenz 20,000; increased by a floating pop. in the months of traffic.

TIME, n. *tīm* [Icel. *timi*; Dan. *time*; Sw. *timme*, hour, season, time; Goth. *gatiman*; Ger. *ziemen*, to be fit or becoming; F. *temps*; It. *tempo*; L. *tempus*, time]: duration; a particular portion of duration, past, present, or future; any space or measure of duration, as an hour, a day, a month; period; interval; life or duration (see SPACE AND TIME); repeated performance; season; completion of the time, as of pregnancy; state of things at a particular period, as good *times*; the present state of things, as distinct from eternity; repetition or addition of one more; in *gram.*, tense; in *music*, (1) the relative duration of musical sounds as measured by the rhythmical proportion of the different notes, a minim being half of a semibreve; a crotchet, half of a minim; a quaver, half of a crotchet, etc. (see RHYTHM); (2) the division into measures or bars, and the division of each measure into equal parts, and subdivision of these parts—the different combinations of sounds into equal measures and values being said to form different kinds of time, each indicated by a distinct rhythmical signature; (3) the degree of movement—that is, the absolute and not relative velocity, which is now more generally expressed by the Italian word *Tempo* (q.v.), as quick *time*, slow *time*. **TIME**, v. to adapt to the occasion; to do at the proper time or season; to regulate as to time; to note the time of; to keep time. **TÍMING**, imp. **TIMED**, pp. *tímd*, adapted to the season or occasion. **TÍMIST**, n. *-míst*, one who keeps good time. **TIMELY**, a. *tím'lí*, seasonable; opportune; sufficiently early: Ad. early; soon; in good season. **TIME'LI-NESS**, n. *-nēs*. **TIME'LESS**, a. *-lēś*, done at an improper time. **TIME'LESSLY**, ad. *-lí*. **TIMEOUS**, a. *tī'mūs*, not too late; timely. **TIMEOUSLY**, ad. *tī'mūs-lí*, in proper time. **ABSOLUTE TIME**, time reckoned for all places by some common epoch, and irrespective of local standards or epochs. **AP-**

TIME—TIMES.

PARENT TIME, the time of day reckoned by the sun. ASTRONOMICAL TIME, mean solar time; reckoned from noon to noon through the twenty-four hours. AT TIMES, at distinct intervals. CIVIL TIME, time as reckoned for the purposes of common life into years, months, etc. COMMON TIME, in *mil.*, the ordinary time taken in marching, being at the rate of about ninety steps per minute; in *music*, four crotchets in a bar, or time equal to four crotchets. IN TIME, in good season; sufficiently early. MEAN TIME, a mean or average of apparent time. QUICK TIME, in *mil.*, rapid marching, in which the steps are about one hundred and ten in a minute. SIDEREAL TIME, that time which is shown by the apparent diurnal revolutions of the stars. SOLAR TIME, time as measured by the sun, or as shown on the sun-dial. TRUE TIME, mean time, as kept by a uniformly going clock. TIME-BALL, a ball dropped down a staff placed on an elevated position at an observatory, by means of an electrical apparatus, to publish accurately a preconcerted time. TIME-BARGAIN, a contract for the sale or purchase of merchandise, or of stock in the public funds, at a certain future time and at a certain price—a speculation and not an investment. TIME-BILL, same as TIME-TABLES, which see. TIME-BOOK, in *workshops* and *factories*, and the like, a book in which a record is kept of the time the work-people have been at work each day. TIME ENOUGH, sufficiently early. TIME-HONORED, a. honored for a long time; venerable and worthy of honor. TIME IMMEMORIAL, or TIME OUT OF MEMORY, time beyond memory, or to which memory does not extend. TIME-KEEPER, a clock or watch; a person appointed to record the time each person has worked per day in a workshop or factory. TIME OF MEMORY, in *Eng. law*, a time said to commence from the beginning of the reign of Richard I. TIME OUT OF MEMORY (see TIME IMMEMORIAL). TIME-KILLING, a. adapted to pass away the time. TIMEPIECE, a watch or ornamental clock for a mantelpiece. TIME-PLEASER, one who is always swayed by the prevailing opinions. TIME-SANCTIONED, a. permitted or approved of by long use. TIME-SERVER, one who adapts his opinions and manners to the times, or who obsequiously complies with the ruling powers. TIME-SERVING, n. mean compliance with present power: ADJ. servile; obsequious. TIME-TABLES, printed lists of the times of starting and arrival of the several trains at each station of one or more railways, or of stages, steamboats, etc. TIME-WORN, a. impaired by time. TO KILL TIME, to make the time pass pleasantly or without tediousness by occupying the attention with something. TO LOSE TIME, to delay; to go too slow. TO MOVE OR GO AGAINST TIME, to move or run as rapidly as possible to ascertain the greatest attainable speed.

TIME, MEASUREMENT OF: see HOROLOGY.

TIME. STANDARD, in North America: see HOROLOGY.

TIMEOUS, TIMEOUSLY: see under TIME.

TIMES, *tīms*, THE: largest and most important daily newspaper in England, and probably the greatest in the world. It was founded toward the end of the 18th c. by

TIMES.

John Walter, London printer. 1785, Jan., he established *The Daily Universal Register*, which he continued until 1788, Jan., when he changed the name to *The Times, or Daily Universal Register*, afterward shortened to *The Times*. When, in 1803, his son John became joint-proprietor and sole manager, the *Times* soon became remarkable for accuracy and freshness of news, and independence on social and political questions. About 1805 the vessels bringing the letters of the *Times* and other war correspondents from the continent were stopped by the govt.; and Walter, declining to be supplied as a favor, like the other newspapers, with official information, organized a system for special and early transmission of news for the *Times*, by which often the public dispatches were anticipated—e.g., concerning the result of the battle of Waterloo. Increased circulation, the reward of these efforts, found its limit in the slowness (250 copies per hour) of the hand-printing press: this occasioned the introduction in 1814—after more than 10 years of experiment by inventors—of the steam-press. From this time, Walter intrusted the superintendence of the literary department to Thomas Barnes (1785—1841), the first editor, during whose service a series of leaders by Edward Sterling obtained for the paper new political and social influence, recognized by the name 'the Thunderer,' then applied to it.

In 1841 John T. Delane became the editor, holding that post till he retired, 1877. In 1841 the detection by the Paris correspondent of the *Times* of a great financial conspiracy, headed by a French baron, saved the leading banking-houses of London from being defrauded to the extent of a million sterling.—The editor of the *Times* since 1884 has been George E. Buckle.

The *Times* has made its mistakes—mostly excusable or at least easily accounted for, like its blunder in promptly accepting not only the justice, but also the sure success, of the war for secession in the United States. More unaccountable, and without any excuse known to the general public, was its mistake in the charges against Parnell in connection with the Pigott forgeries 1887 (see HOME RULE).

Important mechanical improvements have been introduced in the printing-office: the 'Walter' Press 1871; the composing-machine 1872; and the latest improved Hoe Cylinder Press, ordered 1892 (see PRINTING). Annual summaries from the *Times* for years since 1851, and its obituary notices of *Eminent Persons* (since 1870), have appeared as volumes. In 1877 a weekly edition of the *Times* began to be issued. In 1880 the *Quarterly Review* stated the circulation of the *Times* at 100,000. Notable features of the paper are, and long have been, the great fulness and accuracy of parliamentary intelligence; the literary merit of leading articles; the value of special telegrams and letters; the care and good taste in revision of contributions.—See Hunt's *Fourth Estate*; Andrews's *History of Journalism*; Grant's *Newspaper Press*; Hatton's *Journalistic London* (1882).

TIME SIG'NALS: see HOROLOGY.

TIMID, a. *tīm'īd* [F. *timide*—from L. *timidus*, faint-hearted, cowardly—from *timēō*, I am afraid of: It. *timido*; Gael. *tiom*, timid]: faint-hearted; wanting courage to meet danger or difficulty, real or imaginary; timorous; shy. TIM'IDLY, ad. -lī. TIM'IDNESS, n. -nēs, or TIMIDITY, n. *tī-mīd'ī-tī* [F. *timidité*]: want of courage or boldness to face danger; habitual cowardice. TIMOROUS, a. *tīm'ēr-ūs* [L. *timor*, fear]: full of fear or scruples; fearful of danger. TIM'OROUSLY, ad. -lī. TIM'OROUSNESS, n. -nēs, fearful-ness.—SYN. of 'timid': fearful; timorous; afraid; cowardly; pusillanimous; retiring; shrinking.

TIMOCRACY, n. *tī-mōk'ră-sī* [Gr. *timē*, honor, work; *kratēō*, I govern]: a form of government in which the possession of a certain amount of property is a necessary qualification for office. TIMOCRATIC, a. *tī-mō-krăt'ik*, pertaining to timocracy.

TIMOLEON, *tī-mō'lē-on*: great Greek general, and the liberator of Sicily from the dominion of 'tyrants': about B.C. 394-337; b. Corinth; of one of the noblest families. T.'s brother, Timophanes (whose life T. had saved on the field of battle) having made himself a military despot in his native city, was killed in T.'s presence and without his objecting; and opinion was divided in Corinth as to the merit of this deed, one party extolling it as an act of noblest patriotism, while the other demanded T.'s death as a murderer. The expedient was adopted of sending T. away as leader of a small band of mercenaries (B.C. 344) to Syracuse, whose exiled citizens had begged assistance from Corinth, the mother city, against the 'tyrant' Dionysius and the Carthaginians. Outwitting the Carthaginians, T. arrived safely at Tauromenium, where he was welcomed by the Syracusan exiles. Hicetas, 'tyrant' of Leontini, was then striving to dispossess Dionysius and secure the tyranny of Syracuse for himself, and had succeeded in getting possession of the whole city except the island citadel. T., with only a fifth of the opposing number, defeated him at Adranum; and marching to Syracuse, made himself master of two quarters of the city. From this time T.'s career in Sicily was one of victory over all opponents. Dionysius the Younger (q.v.) B.C. 343 surrendered in despair the citadel of Syracuse, and was sent to Corinth. Hicetas, having failed in the attempt to assassinate T., called in the assistance of a Carthaginian force of 50,000 men, which, however, was soon withdrawn by Mago, who had become suspicious of treachery. Hicetas at last fled to Leontini, leaving T. sole master of Syracuse. After re-peopling the almost desolate city by recalling exiles, and inviting new colonists from Greece, Italy, and Sicily, he spent the next two years in enacting laws and organizing a constitution, which he put on a completely democratic footing. The Carthaginians, alarmed at the reviving power of Syracuse and the prospect of union among the Sicilian Greeks, sent an army of 80,000, under Hasdrubal and Hamilcar, to subdue the whole island. T., with only 12,000, encountered them (B.C. 339) on the Crimissus, and

TIMON—TIMOR.

gained one of the greatest victories ever won by Greeks over barbarians. He then proceeded with his great project of expelling the tyrants of the other Greek cities, who, however, again called in the aid of the Carthaginians; but the successes of T. soon made the Carthaginians glad to conclude a treaty, fixing the river Halycus as the boundary between their dominions and those of the Greeks. Hicetas, tyrant of Leontini, being now captured, was put to death with his wife and daughters; and shortly afterward Mamercus of Catana suffered the same fate. T. thus in about six years freed Sicily from nearly all its tyrants, and conferred upon the cities free constitutions, himself taking no advantage of the immense influence which he thus obtained. After his great work was accomplished, he lived among the Syracusans as a private citizen, receiving from them and from all the Greek world the greatest honor and respect: his advice was sought in his old age by all the Sicilian cities in any emergency. He was buried in the market-place of Syracuse, where a monumental gymnasium, called the Timoleonteum, was afterward erected over his tomb. T. was undoubtedly one of the greatest generals and noblest characters in Grecian history.

TIMON, *tī'mon*, **THE MIS'ANTHROPE**: Athenian cynic in the time of the Peloponnesian war (B.C. 431-404). The little that is known concerning him is learned chiefly from Aristophanes and other comic writers who attacked him. Disgusted with mankind, on account of the ingratitude of his early friends and companions, he lived a life of almost total seclusion, his only visitor being the 'bold and insolent' Alcibiades. Numerous stories were current in antiquity regarding his eccentricities. His grave, on the sea-shore, is said to have been planted with thorns, and to have been rendered inaccessible by the sea forming it into a small island.—Plutarch gives a short notice of T.'s life in his biography of Mark Antony, from which Shakespeare probably got his knowledge of T., whom he presents as being of essentially generous nature, and falling into his misanthropy through his absolute lack of discrimination.

We know him out of Shakespeare's art,
And those fine curses which he spoke—
The Old Timon with his noble heart,
That, strongly loathing, greatly broke.

TENNYSON.

This T. must be distinguished from the Greek poet and philosopher of the same name, who lived about a century and a half later.

TIMONEER, *n. tī-mōn-ēr'* [*F. timonier*, a helmsman; *tīmon*, a helm—from *L. tēmo*, a beam, a pole]: in *OE.*, a helmsman.

TIMOR, *tē-mōr'*: island of the E. Indian Archipelago; the most important of the chain stretching from Java; lat. 8° 40'—10° 40' s., long. 125° 30'—127° e.; 300 m. long, mean breadth 60 m.; about 11,000 sq. m. Pop. estimated about 500,000. A chain of wood-clad mountains extends its entire length; Alas, on the s.e., 11,500 ft. in height; Lakaan, in 9° 10' s. lat., 6,175 ft.; and Miomaffo 4,630 ft. The prevailing rocks are of the graywacke formation, which at

TIMOR.

the s. base of Miomaffo, is cut by serpentine mountains of limestone; and calcareous rocks resembling ruins frequently occur. Magnetic iron, porphyry, syenite, gold, copper, malachite (containing 22 per cent. of pure copper), sulphur, and naphtha are found.

The dry monsoon is from May to Nov., during which no rain falls. From Nov. to Apr. there are daily storms of rain and wind from the n.w.; the streams are swollen; the thermometer rises to 94° F. in the shade; the earth is covered with a dark-green carpet, and myriads of insects come into life. The rivers are numerous, but small, and most of them yield gold. Near the sea are very fertile lands, on which are grown rice, maize, beans, tobacco, sugar-cane, cotton, potatoes, and tropical fruits. There are many varieties of the palm, the lontar being useful for food and other purposes. Timber-trees suited for masts attain a height of 100 ft., and 3 to 4 ft. diameter; the wild nutmeg, cinnamon, and tamarind are plentiful; and bamboos make the forests impenetrable in many parts. About 600 species of plants are known, a great number medicinal, and few poisonous. Indigo grows in all parts, and potatoes in the mountains.

Three-fourths of T., on the s.w. (4,500 sq. m., pop. 200,000), is subject to the Dutch, whose chief settlement is Koepang (Kūpang); the remaining part, in the n.e. (about 6,500 sq. m., pop. 300,000), belongs to the Portuguese, who have a town called Dilly, on the n. coast, with a safe roadstead, and a fort nearly destroyed by an earthquake 1857. T. is divided into small kingdoms, ruled by rajahs under Dutch or Portuguese control.

Koepang (pop. 8,000) lies at the base of a semicircle of wooded hills, on a beautiful bay in the s.w. It is the cap. of the Netherlands residency or govt. of T. which includes Samao, Rotti, Savu, the Sandal-wood Island, Sumbawa, Flores, Adamara, Solor, Lomblem, Ombay, and the small islands of the chain. It is irregularly built, the principal buildings being the governor's house and the Prot. church. There is a Mohammedan and a Chinese temple, one Dutch and two Malay schools. Whalers and trading-ships from Sydney, etc., call for provisions on their way to or from Java and Singapore; and T. will be a convenient market for supplies to the settlements in n. Australia, eight days' sailing distance.

The exports are sandal-wood, horses, wax, tortoise-shell, edible nests, etc.; imports, cotton, woolen, and silk fabrics, provisions, and general supplies. Pearls are found on a bank 30 m. s.e. from Koepang. The natives (largely Papuan) are partly Oceanian negroes and partly of Malay race. They worship a supreme being called 'Lord of the Sun.' Near the Netherlands' settlements, several hundreds have been baptized, but missionary efforts have not been very successful. The fathers sell their daughters for gold and buffaloes, and polygamy prevails among the rich.

TIMOR-LAUT—TIMOTHY.

TIMOR-LAUT, *tē-mōr'lowt*, THE; or **TENIMBER ISLANDS**, *tēn-īm'bēr*: group in the E. Indian Archipelago, e. from Timor; in 6° 40'—8° 23' s. lat. and 130° 26'—132° 2' e. long.; 3,150 sq. m. Pop. 15,000. By far the largest island of the group is Timor-Laut ('seaward Timor'), 78 m. long, 21 m. wide. The soil is rich, and covered with luxuriant vegetation, various palms and other useful trees growing in great abundance. At a little distance from the shore, mountains encircle the island.

The island next in importance is Larat, whose n.w. point is in 7° 6' s. lat. and 131° 47' e. long.; 147 sq. m.; pop. 2,500. It also is mountainous. Further n. are Vorhate, Marū, and Molo. On the w. of Timor-Laut are Selū and Sejrah; a multitude of smaller islands of coral formation being scattered around.

On the larger islands are small horned cattle, goats, swine, fowls, and a great variety of birds. No birds are more beautiful than the Blue-streaked Lory (*Eos reticulata*) and the Citron-crested Cockatoo (*Cacatua citrino-cristatus*). Fish are plentiful in the rivers of T. and surrounding seas, and there is considerable export trade in tortoise-shell and Bêche-de-Mer (q.v.). British trading-ships from Singapore, and South Sea whalers, sometimes visit these islands, and frequently have been treacherously attacked. The natives, evidently of Papuan race, are tall, well made, with fairer complexion and more regular features than the Alfors. They are low in the scale of civilization.

TIMOROUS, etc.: see under **TIMID**.

TIM'OTHY: kind of grass: see **HERD'S GRASS**.

TIMOTHY, *tīm'o-thī*, **FIRST AND SECOND EPISTLES TO**: two of the three Pastoral epistles of the apostle Paul—the third being the Epistle to Titus (q.v.). The date and place of their writing are not known; but their thought and diction, consistent with their purpose, indicate that they belong to a later period than the other Pauline epistles, when new heresies had appeared, and a more systematic organization of the church had become necessary. The external evidence for their genuineness is very strong, yet has not satisfied all scholars. They occur in the Muratorian Canon and the Peshito version as writings of St. Paul; Eusebius classes them among the *homologoumena* (universally accepted as authentic); while, still earlier, Irenæus, Tertullian, and others of the Fathers quote them as authoritative. On the other hand, Tatian (q.v.), one of the earliest Fathers, denies their genuineness, as did also Marcion, Basilides, and most of the Gnostic heretics. Origen speaks of some who rejected T. II., on account of the mention of 'Jannes and Jambres,' two apocryphal characters; while, in modern times, Schleiermacher and Neander admit the Pauline origin of T. II., and endeavor to disprove the genuineness of T. I. Eichhorn, De Wette, Baur, and others go further, and attempt to prove unauthentic all three Pastoral epistles, considering the language and mode of thought distinct from the Pauline, and (particularly Eichhorn) finding no period in the apostle's life to which they could be properly fitted in. But, while

such arguments have had weight with a number of writers, the general verdict of biblical scholarship remains in accord with ancient and undeniable tradition—maintaining the authenticity and apostolic authority of these epistles.—They consist of a series of warnings against false doctrine, exhortations, and directions as to procedure in the church.—See the ‘Introductions’ of Alford, Wordsworth, Davidson; Wiesinger, Hug; and the list of commentators on the ‘Pastoral Epistles,’ appended to the article on the Epistle to Titus.

TIMOTHY, or TIMOTHEUS, *tī-mō'thē-ūs* [Gr. *timō*, I honor; *theos*, God]: companion of Paul the apostle: b. about A.D. 20, in Lycaonia, Asia Minor; son of a Greek father and a Christian mother, Eunice, and instructed by her and her mother, Lois, in the Holy Scriptures. Paul on his second missionary tour (Acts xvi.) found T. at Derbe or Lystra; from that time he became the apostle's beloved and devoted assistant, amanuensis, and messenger to the churches; and his name is even coupled with Paul's in the beginning of five important epistles, as if co-author. He was with the apostle in Rome, but afterward was deputed by Paul to represent him in superintending the church at Ephesus, where he was addressed by Paul in two epistles—Timothy I., II. All that is known of him subsequently is that he had been ‘set at liberty’ (Heb. xiii. 23) after imprisonment. The Book of Acts has been ascribed to him improbably, the ‘we’ (Acts xx. 4–5) referring to another. His admirable character was such that Paul addressed him as ‘my beloved son.’

TIMOTHY-GRASS, *tīm'ō-thī* [after *Timothy* Hanson, who cultivated it extensively in Maryland and was the first to bring it into notice, about 1780]: the *Phlěum praten'sě*, ord. *Gramin'ěæ*, a valuable fodder-grass, extensively cultivated in both Great Britain and America; same as Herd's Grass (q.v.).

TIMROD, *tīm'rod*, HENRY: poet: 1829, Dec. 8—1867, Oct. 6; b. Columbia, S. C. He was educated in the Univ. of Georgia; then studied law, but never practiced. His first vol. of poems was pub. in Boston 1860. The outbreak of the secession war was the great opportunity for the display of his genius, and his war lyrics—at once graceful and fiery—were very popular at the south. Paul H. Hayne published a collection of his poems (New York, 1873), with sketch of the poet's life.

TIMUR

TIMUR, *tē-môr'*, called also TIMUR BEG and TIMUR-LENG from his lameness, and popularly known among western writers as TAMERLANE: famous oriental conqueror, second of the great conquerors whom central Asia sent forth in the middle ages: 1336, Apr. 8—1405, Feb. 17; b. Kesh, or Shahr-i-Sabz, about 50 m. s. of Samarkand, in Transoxiana. His biographers make him fifth in descent from Karatchâr Nuyan, relative and counselor of Genghis Khan (q.v.), and ninth from Tûmna Khan, direct ancestor in the male line of his renowned predecessor. The royal line of Jagatai (see TURKESTAN) had so utterly degenerated that the real power was in the hands of a number of independent chiefs of Mongol blood, each of whom, choosing a prominent city of the kingdom, there set up his standard, and lorded it over the surrounding district. One of these chiefs, Hadji Berlas, uncle of T., had established himself at Kesh, and here the future conqueror passed the first 22 years of his life in peaceful obscurity, applying himself to athletic exercises and to study. But a formidable inroad (1360) of the Kalmucks of Jettah, who speedily subjugated Turkestan, expelling those chiefs who refused submission, called forth T.'s untried energies. Declining to accompany his uncle in his flight, he boldly advanced with a small retinue to meet the invader, who was so charmed with his eloquence and address that he at once confirmed him in the government of Kesh, and appointed him one of the principal ministers of his son, the new monarch of Turkestan. But neither chiefs nor people of the conquered country could long endure the tyranny of a race more cruel and barbarous than themselves, and the exiles and fugitives having been collected by the emir Husseyne, and joined by a powerful force under T., the Kalmucks were ultimately expelled, 1365, and Turkestan divided between its two liberators, who ruled together for some time; but war having arisen between them, Husseyne was defeated and slain, and T., by unanimous consent of the chiefs, was hailed as supreme lord of Turkestan. It was in the war against the Kalmucks that T. received the wound in the thigh which lamed him for life. He did not, however, either then or afterward, assume the rank of a sovereign, but, elevating one of the royal race to the throne, reserved for himself the real authority and the title *emir*. Having thus, in ten years, risen by superior ability to absolute authority over a numerous and warlike people, he proceeded to avenge his nation's wrongs on the Kalmucks of Jettah and Mogulistan; then turned w. to punish the predatory tribes of Khau-rezm, who had plundered Bokhara; and spent the interval between these campaigns in supporting Toktemesh Khan, one of the claimants to the throne of Kiptchak, ultimately (1376) placing him in undisputed possession. With the view of restoring to the empire of Jagatai its former boundary, he summoned the prince of Herat and the other chiefs of n. Khorassan to attend a 'kouriltai;' and on their refusal immediately attacked and reduced them to submission, levying a moderate contribution as a penalty. But, soon after (1383), the people of Herat again rebelled, and

murdered the envoys whom he sent to remonstrate; and, as an effective reminder of the consequences of rebellion, T. left 2,000 of the garrison built up, with an alternate layer of brick and mortar, into the form of a pyramid. Seistan was next reduced, the Afghans of Suliman Koh chastised, and T. returned, as was his wont, to spend the winter at one or other of his numerous palaces near Samarkand. In the following year he began with invasion of Maranderan; and by the close of 1387 all the districts w. of the Tigris, from Tiflis to Shiraz, were subdued; those chiefs who voluntarily submitted being mostly confirmed in their governments, while the inhabitants of Ispahan—who, after a pretended submission, suddenly rose upon the Tartar garrison and massacred 3,000 of them—were almost exterminated. Meanwhile Toktemesh Khan, of Kiptchak, took advantage of his absence to invade T.'s territories on the Amu-Daria; whereupon T. returned home, and, after driving the invaders out, pursued them to the head of the Tobol, then w. across the Ural Mountains and river, and, though long baffled by the Arab tactics of his opponents, finally brought them to bay on the banks of the Bielaya (tributary of the Kama), 1391, June 18, and almost annihilated them. Resuming, 1392, his conquering march westward, he crossed the Tigris, subdued the many warlike principalities e. of the Euphrates, then advanced n., through the gates of Derbend, to the Volga, and again routed Toktemesh (who had ventured to resume hostilities), on the banks of the Terek (1395); turned w. as far as the Dnieper, then n. to Moscow, returning by Astrakhan and the Caucasus, leaving death and desolation in his track. In 1398 T. campaigned in Hindustan, entering by the passes of the Hindu Koh, near Cabul, and routing *seriatim* the numerous armies collected to oppose him, till the number of prisoners became so great that, four days before the great battle before Delhi between T. and the Indian emperor, T., as a precautionary measure, ordered the murder in cold blood of all the men (said to be 100,000), and then, after totally routing his opponents, took the capital. After a further advance to the Ganges, and other military successes, T. returned to Samarkand, where the immense spoils of the expedition were expended in adornment of his capital. T. returned to western Asia in the following year, and attacked the Egyptian empire in Syria, to avenge the murder of his ambassador and the aid which the Mamluk sultan had given to his enemies. He had his usual complete success in the field; and the capture of Aleppo, Hama, Hems, Baalbek, and Damascus proved his skill in the attack of fortified places. His mode of attack was to undermine the fortifications on all sides, then to fire the mines with wood steeped in naphtha, and on the destruction of the walls and battlements, which uniformly resulted, to charge in overwhelming force through the breaches. Similar conduct to that of the Mamluk sultan, on the part of Sultan Bajazet I., drew from T. repeated remonstrances, which the other, in the overweening confidence springing from uninterrupted success, answered

with insult; but the advance of the Tartars to his frontiers soon opened his eyes to the greatness of his error, and with a powerful army he hastened to oppose them. The two hosts met at Angora, 1402, July 20, and after a long and obstinate contest, in which, though the generalship of Bajazet and the steadiness of 20,000 Servian auxiliaries long balanced the superiority of T.'s troops, the Turks were totally routed, and Bajazet was captured. The conquest of the whole of Asia Minor speedily followed; the Byzantine emperor rendered submission to the victor, as did also the Turkish ruler of Thrace; and the Knights of St. John were expelled from Smyrna. The unfortunate Bajazet died after a few months' captivity, though uniformly treated with great considerateness; and about the same time T. began his return—receiving on the way a most satisfactory embassy from the Egyptian sultan, who was now glad to come to terms—conquering Georgia, where he spent the winter; and, resuming his march in the following year by Merv and Balkh, reached Samarkand 1404. Here he resumed preparations for the long-projected invasion of China, continued the embellishment of the capital, and celebrated his vast successes by gorgeous festivities. All things being ready, he started with a large army for the Sihun, marched down that river to Otrar, where, being detained by the severity of the weather, he was attacked by an ague-fever, and died after a week's illness.—T. holds a high position as a mere conqueror: his antagonists were mostly warlike and disciplined, and seldom much inferior in number; yet, from the savage horsemen of the Siberian steppes to the mail-clad warriors of Servia, all alike were forced to bow before the prowess of the Mongol conqueror. The charge of cruelty brought against him is completely established by the massacre in India; but opposite to this might be placed many instances of a lenity and forgiveness almost incredible in a 'barbarian.' He did much to promote the arts and sciences throughout his dominions, but the speedy dissolution of his empire deprived his labors of any permanent utility.—The principal authority for the life of T. is Sherif-ed-Din-Ali's *History* (in Persian), translated into French by Pétis de la Croix, under the title *Histoire de Timur-Bec, connu sur le nom du grand Tamerlan* (4 vols. Par. 1722). Several writings are extant, in Persian, attributed to T., but are of doubtful authenticity. Among these are the *Institution* (with Eng. transl. and valuable index, Oxford 1783); and the *Commentaries* of T., transl. from a MS. of Major Davy by Major Stewart. See also a translation of the narrative of Clavijo, envoy of Henry III. of Castile to T., by C. R. Markham (Hakluyt Soc. 1860); and Howorth's *History of the Mongols* (1880).

TIN.

TIN, n. *tĭn* [Sw. *tenn*; Dan. and Icel. *tin*; Ger. *zinn*, tin; W. *ystaen*: L. *stannum*]: an elementary body: a white, soft, and very malleable metal (see below); thin plates of iron covered with a coating of tin; a dish made of tinned-iron plate; in *slang*, money: V. to cover with a coating of tin; to overlay with tinfoil; to preserve in tin cases, as fruit, meat, etc. **TIN'NING**, imp.: N. the art or process of covering plates of iron, or the inner surfaces of iron or copper vessels, etc., with a coating of tin; the layer or coating thus put on; the canning of meat, fruit, etc. **TINNED**, pp. *tĭnd*, covered with tin; preserved in a tin case, as meat, etc. **TINNY**, a. *tĭn'nĭ*, abounding with or resembling tin: N. in *Scot.*, a cup made of tinned sheet-iron. **TIN'NER**, n. *-nĕr*, one who works in a tin-mine; a tinsmith. **TIN'FOIL** [L. *folĭum*, a leaf]: tin in thin leaves. **TIN'MAN**, one who makes or sells articles made of tinned sheet-iron. **TIN-MINE**, a mine producing tin ore. **TIN-PLATE**, thin sheets of iron coated with tin (see below). **TIN PYRITES**, a sulphuret of tin, copper, and iron—a mineral of a steel-gray or sometimes of a copper-yellow color. **TINSMITH**, one who manufactures articles of tinned sheet-iron. **TIN-STONE**, or **-ORE**, the oxide of tin or *cassiterite*, the ore from which the tin of commerce is obtained. **TIN-TYPE**, a photograph taken on tin. **TIN-WARE**, iron articles coated with tin; utensils made of tin-plate. **BLOCK-TIN**: see under **BLOCK**. **STREAM-TIN**, the gravel-like tin ore found with detritus in the gullies and water-courses of metalliferous districts.

TIN (symb. Sn, at. wt. 118, sp. gr. 7·3): a silvery-white metal, with a tinge of yellow, and high metallic lustre. It possesses a crystallized texture, and may be obtained in well-formed crystals of the pyramidal or tetragonal system; and because of this crystalline texture a bar of tin, when bent, emits a creaking sound, termed the *cry* of tin (the *Zinngeschrei*, or tin-shriek of the Germans). Tin is a soft metal—being softer than gold—and is very malleable, and can be beaten out into very thin laminæ, in which form it is known as *tinfoil*. At temperature of about 212° F. its ductility is considerable, but not remarkable, and it may be then easily drawn into wire of moderate tenacity—a wire with diameter 0·17 of an inch being broken by a weight of about 50 lbs. It is a moderately

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good conductor of heat and electricity, and when handled communicates a peculiar odor to the skin. At ordinary temperatures, it is very slightly acted on by exposure to the air, or to moisture, or to both. At the temperature of 392° F. it becomes so brittle that it may be powdered; it melts at 455° F.; heated above melting point, it oxidizes rapidly, being converted into dioxide, a whitish powder called 'putty-powder,' used in the arts for polishing. T. is attacked and dissolved by hydrochloric acid, with evolution of hydrogen; by nitric acid it is converted into a white hydrate of the dioxide.

There are two principal oxides of tin—the monoxide or Stannous oxide, SnO or Sn_2O_2 , and the dioxide or Stannic oxide, SnO_2 : there is also a sesquioxide, Sn_2O_3 or $\text{SnO}.\text{SnO}_2$.

The monoxide of T., or stannous oxide, SnO , is produced by heating stannous oxalate in a closed vessel, or by igniting stannous hydrate: the hydrate, $2\text{SnO}.\text{H}_2\text{O}$, is obtained as a white precipitate by decomposing stannous chloride with an alkaline carbonate, carbon dioxide being at the same time evolved. The monoxide acts as a base, forming salts which are colorless, redden litmus, and are for the most part soluble in water, from which crystalline tin is deposited on an inserted mass of zinc, constituting the so-called *Tin Tree*. None of these salts are of special importance. *Dioxide of T.*, or stannic oxide, SnO_2 , occurs native in the anhydrous form, crystallizing in square prisms sufficiently hard to scratch glass, and generally of brown color from the presence of peroxide of iron or of manganese. It forms two hydroxides: Stannic acid $\text{SnO}_2.\text{H}_2\text{O}$, and Metastannic acid, $\text{Sn}_5\text{O}_{10}.\text{5H}_2\text{O}$. *Stannic acid* is precipitated by acids from solutions of alkaline stannates, and from solution of stannic chloride by calcium or barium carbonate. It dissolves in the stronger acids, forming the stannic salts: thus with sulphuric acid it forms stannic sulphate, $\text{Sn}(\text{SO}_4)_2$. With the alkalis, stannic acid forms easily soluble salts, from which the insoluble stannates of the earth-metals and heavy metals may be obtained by precipitation. The stannate of sodium, Na_2SnO_2 , is used as a mordant in calico-printing. *Metastannic acid* is produced by action of nitric acid on tin. Dried in air at common temperatures, its composition is $5\text{SnO}_2.10\text{H}_2\text{O}$; but at 212° F. it gives off 5 molecules of water, and is reduced to $\text{H}_{10}\text{Sn}_5\text{O}_{15}$. It is a white crystalline powder insoluble in water and in acids; dissolves slowly in alkalis, forming the metastannates, e.g., Potassium metastannate, $\text{K}_2\text{H}_8\text{Sn}_5\text{O}_{15}$, and Sodium metastannate, $\text{Na}_2\text{H}_8\text{Sn}_5\text{O}_{15}$. The metastannates exist only in the hydrated state, being decomposed when deprived of their basic water.

There are two chlorides of T.—viz., a dichloride and a tetrachloride. The *Dichloride of T.*, or stannous chloride, SnCl_2 , may be obtained in a hydrated form by dissolving the metal in hot hydrochloric acid, and evaporating the solution, when the salt crystallizes in prismatic needles, having the composition $\text{SnCl}_2.2\text{H}_2\text{O}$. The hydrated proto-

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chloride is used as a mordant, and for deoxidizing indigo and the peroxides of iron and manganese, by the dyer and calico-printer; and for its deoxidizing or reducing powers, it is sometimes employed in analytical chemistry, especially in determination of the quantity of mercury, since all the mercurial salts, when boiled with it, are decomposed, and yield their mercury in the metallic form. *Tetrachloride of T.*, or stannic chloride, SnCl_4 , forms, with the chlorides of the alkali metals and alkaline earth-metals, crystalline double salts, called *Stannochlorides* or *Chlorostannates*, e.g., $\text{SnCl}_4 \cdot 2\text{NH}_4\text{Cl}$; $\text{SnCl}_4 \cdot \text{BaCl}_2$, etc.; the compound of this nature which it forms with chloride of ammonium is represented by the formula $\text{CnCl}_4 \cdot 2\text{NH}_4\text{Cl}$, and is employed by the dyer under the technical term *Pink Salt*. An impure tetrachloride, prepared by dissolving T. at a gentle heat in a mixture of nitric acid and sal-ammoniac, and known in the trade as *Nitromuriate of Tin*, or *Composition*, is also largely used by dyers and calico-printers. Trichloride of gold, added to dilute solution of stannous chloride, produces a brownish-purple precipitate known as *Purple of Cassius*.

The sulphides of T. are three—the monosulphide, the sesquisulphide, and the bisulphide. The *Bisulphide of T.* SnS_2 , may be obtained in the hydrated state, in the form of a dingy yellow precipitate, by passing hydrogen sulphide through a solution of stannic chloride. In the dry way, it is procured in the form known as *Mosaic Gold*, which is insoluble in any acid, though soluble in aqua regia; and is employed in the arts to give an appearance of bronze to the surface of metals.

Reduction and Manufacture.—Tin must have been one of the metals earliest known, as it enters into the composition of Bronze (q.v.), of which the most ancient metallic weapons and tools were made. Tin and oysters were the earliest products for which Great Britain was famous. Tin is still largely obtained in Cornwall; and from that locality the Phœnician navigators took it to Tyre and Sidon. To this day, England is by far the greatest tin-producing country, having raised (1894) over 13,700 tons of dressed ore, or 8,800 tons of the metal. Minor T. ore deposits in Europe exist in the Erzgebirge (Germany), Brittany (France), Galicia (Spain). Also, in the Malay peninsula and in Queensland and New S. Wales (Australasia), in Bolivia and Peru (S. America), and in the region of the Black Hills (United States), T. ore is found.

In the report of the Geological Survey office on the mineral resources of the United States, 1888, the following analyses of different tin ores are given.

I. CASSITERITE FROM THE BLACK HILLS, DAK.

Mines.	Stannic Oxide.	Insoluble.	Specific Gravity.
Occidental	96.42 = 75.86 tin	3.58	6.923
Tin Mountain.....	97.5 = 76.7 tin	...	6.923
First Find.....	94.70 = 74.5 tin	...	6.728

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II. COMPARATIVE ANALYSES OF CASSITERITE.

Localities.	Stannic Oxide.	Specific Gravity.
	<i>Per cent.</i>	
Finbo, Sweden.....	93·6	...
Wicklow, Ireland.....	95·26	6·75
Xeres, Mexico.....	89·43	6·862
Tipuani, Bolivia.....	91·80	7·021
Zinnwald.....	88·04	...
California.....	76·15	...
Cornwall.....	98·93	...
Schlackenwald.....	99·28	...

There is but one ore of tin of any importance—viz., the dioxide, or stannic oxide, SnO_2 , which in its pure state consists of tin 78 and oxygen 22: it is called Tin-stone or Cassiterite. Tin ore has nothing remarkable in its appearance; it is of various colors—e.g., gray, various shades of yellow and red, and black. Its specific gravity—a notable feature—is 6·9; and it strikes fire with steel. In Cornwall, the tin ore occurs in mineral veins running through granite and slate rocks, or scattered in crystals through their mass. The tin-stone obtained from the veins or lodes is called *Mine-tin*; that procured by washing alluvial deposits is called *Stream-tin*—the latter is the result of disintegration of granite and other rocks which contained veins of tin. Washed Cornish tin ore, usually called ‘black tin,’ pro-

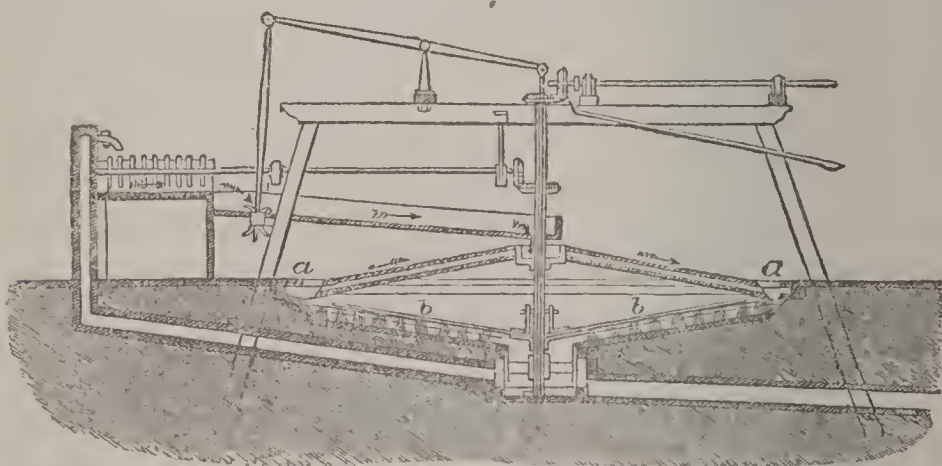


Fig. 1.

duces on an average about 67 per cent. of metallic or ‘white’ tin. Tin pyrites, or sulphide of tin, is found in some of the Cornish mines, but it is of little importance commercially. Ores containing copper are sometimes found with so large proportion of tin that it is difficult to say whether they should be regarded as tin or copper ores.

The dressing of tin ore obtained from the mine is a difficult and delicate operation. It is so much dispersed through the gangue that it requires to be stamped to a very fine powder (for the apparatus, see METALLURGY) before the metallic particles can be effectually separated. In some mines, the proportion of oxide to the rest of the material is not so much as 10 lbs. to the ton.

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The stamped ore is copiously supplied with water passed through a grating adjoining the stamps, and conveyed into a channel where there are two pits. The purer and heavier portion falls into the first, and is called the *crop*; the remainder, called the *leavings*, passes through the first, and is retained in the second pit. Repeated washings are now necessary to separate as thoroughly as possible the impurities from the ore, and for this purpose a machine called a *buddle* is largely employed. Various kinds of apparatus are used, but they are similar in principle to the jigging sieve and sleeping table (see METALLURGY). The form of buddle, known as 'Borlase's Buddle,' effects a saving of about 30 per cent. Figs. 1 and 2 show this machine. The ore and earthy matters, in the state of thick mud, are conveyed by square pipes or channels to the circumference *a, a*, around which, by aid of water, the metallic portion separates, while the lighter stony impurities flow toward the centre, and are carried away. There are brushes at *b, b*, for agitating the ore during the operation. In the older form of buddle, this action is reversed, and the machine, instead of being depressed, is raised in the centre.

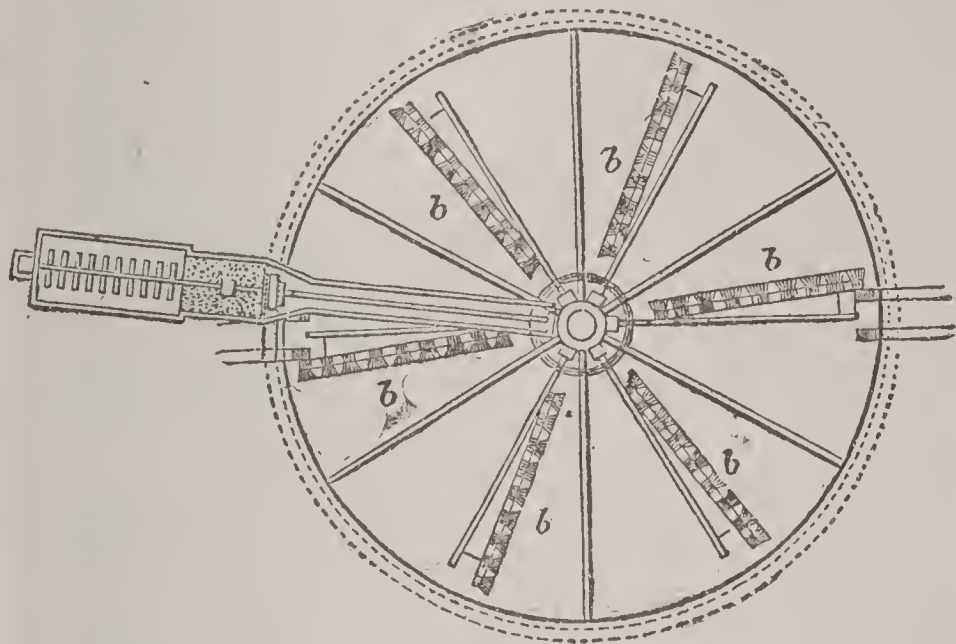


Fig. 2.

The tin ore thus far purified has next to be deprived of its sulphur and arsenic; this is done in a Reverberatory Furnace (q.v.), the flues of which are connected with large condensing chambers, in which the arsenic is deposited in a crystalline form (see ARSENIC), and is afterward resublimed, to form the white arsenic of commerce. The sulphur, present in the state of sulphide of iron, is decomposed by the heat into sulphurous acid gas, and the remaining oxide of iron is removed by a subsequent washing. Sulphide of copper, when present, is converted by roasting, and afterward exposing it to the air, into sulphate of copper, and is then easily dissolved out by lixiviation.

After this final washing, the ore is ready for smelting in a reverberatory furnace. The charge consists of from 20 to 25 cwt. of ore mixed with one-sixth of its weight of

powdered anthracite or charcoal, and a small quantity of lime or fluor-spar, to serve as a flux for the siliceous impurities. Before being put into the furnace the mixture is moistened with water, to prevent the finely powdered ore being carried away by the draught. When the charge is placed on the hearth of the furnace, the doors are closed, and the heat gradually raised for about six hours; the oxide is then reduced by the carbon of the coal. At this stage, the furnace-door is opened, and the mass worked with a paddle, to separate the slag, which is raked off, and the richer portion of it melted over again. The reduced tin subsides to the bottom, and is run off into a cast-iron pan, from which it is ladled into molds, to produce block or ingots of convenient size.

The tin has still to be purified, first by a process of *liquation*, and afterward by that of *boiling*. 'Liquation' consists in moderately heating the blocks in a reverberatory furnace till the tin, owing to its comparatively easy fusibility, melts, and flows into the refining-basin, leaving on the hearth of the furnace a residuary alloy of tin with iron and other metals. More blocks are added, and heated in the same way, till the refining-basin contains about five tons. The tin is then ready for 'boiling.' In this operation, billets of green wood are plunged into the melted metal, the disengagement of gas from which produces a constant ebullition, and so causes a scum (chiefly oxide of tin) to rise to the surface, which is then easily removed; at the same time, impure and dense parts fall to the bottom: when the agitation has gone on long enough, the bath is allowed to settle and cool. The tin then separates into zones—the upper consisting of the purest portion; the middle being slightly mixed with other metals; and the lower so much so, that it requires to go through the refining process again. The residuary alloy of the liquation process has also its tin extracted and refined again.

Tin ores which contain the mineral wolfram (tungstate of iron and manganese) are treated by Oxland's process. This mineral and tin ore are so nearly the same in specific gravity, that no mechanical process of washing will separate them. Oxland's process consists in roasting the dressed tin ore with sodium sulphate to convert the insoluble tungstate of iron and manganese into the soluble tungstate of sodium, which is easily removed by lixiviation. The oxides of iron and manganese, which are left in finely-divided state, can then, from their lower density, be readily removed by washing. The tungstate of sodium procured in the operation has been found one of the most valuable substances for rendering cotton cloths non-inflammable.

Tin when heated to nearly its melting-point becomes brittle, and can then be broken into prismatic fragments called *dropped* or *grain tin*. The metal which is susceptible of this change may be considered of fine quality, as impure tin does not become brittle when so treated. The peculiar properties of tin, especially its malleability, its brilliancy, and the slowness with which it oxidizes at common temperatures in the atmosphere, render it of great

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service in the arts. Utensils coated with silver require six cleanings for one that would suffice with 'tinned' vessels. Tin is consequently largely used to coat the surface of other metals, as iron and copper, especially thin sheet-iron to form tin-plate.

With other metals tin forms some valuable alloys: see ALLOY. An amalgam of tin and mercury forms the metallic coating of mirrors. Tin-foil, $\frac{1}{1000}$ of an inch thick, is used for various purposes, and contains 96 to 98.5 per cent. of tin, with small proportions of copper, lead, iron, and sometimes nickel. The import of T. into the United States (1902-03), in tin bars, blocks, pigs, grain, and granulated, was 1,164,859 lbs., value \$321,652.

TIN-PLATE.—This manufacture forms a branch of the iron trade. The art of tinning plate-iron is said to have been invented in Bohemia, about the beginning of the 16th c., though the tinning of copper was practiced earlier; tin plate was made in England, first about 1670.

Sheet-iron for tin-plates is made either of charcoal-bar or coke-bar, which has been rolled with particular care, to avoid scales on the surface. Before tinning, the plates are called 'black plates.' When the iron has been cut to the required size, the plates are 'pickled'—i.e., immersed in hot sulphuric or hydrochloric acid diluted with 16 parts of water to 1 of acid, the use of the acid being to remove all oxide. After this, the plates require washing several times in water; then follows an annealing in closed cast-iron boxes in a reverberatory furnace. The next operation consists in passing the plates two or three times between chilled iron rollers highly polished with emery and oil, to give the plates a polished surface. Once more they are sent to the annealing furnace; passed again through dilute sulphuric acid; then again washed, but this time in running water; and then scoured with sand. This should leave them clean and bright for the tinman.

Each plate is now put singly into a pot of melted grease (which has become sticky by use), and left till it is completely coated, after which the plates are taken in parcels and plunged into a bath of melted tin covered with grease, called the 'tin-pot.' They pass from this to another vessel, with two compartments, called the 'wash-pot,' both of which contain melted tin of the purest quality, and, like the last, covered with grease. The plates are put into the first compartment in parcels, where they receive a coating of purer tin than that of the 'tin-pot,' and are then withdrawn one by one, and wiped on both sides with a hemp brush: the marks of which are obliterated by another dipping in the second compartment of the 'wash-pot.' This last dipping also gives the plates a polish. Next is the removal of the superfluous tin by immersing the plates in a pot containing tallow and palm-oil, maintained at a temperature no higher than will keep in liquid state the tin in contact with the oil, and so allow it to run off. The final treatment consists in working the plates separately in troughs of bran with a little meal, and then rubbing them with flannel,

TINCAL—TIND.

There is a variety of tin-plates called 'terne-plates,' coated with alloy of tin and lead, in which the proportions vary from one of lead and two of tin to two of lead and one of tin. They are used for roofing.

Upon the enactment of the McKinley Tariff Act, the manufacture of terne plates, or at least the 'dipping' of 'black plates,' whether of home or foreign manufacture, sprang up in the United States. Tin-plate proper also is now manufactured in quantity in the United States. The import of T.-plate into the United States in the fiscal year ended 1893 was 255,485 gross tons. The product of T.-plate in the United States (1901) was 399,291 tons.—Import (1901) 77,395 tons.

TINCAL, n., or **TINKAL**, n. *tĩng'kāl* [Mal. *tingkal*: Pers. *tĩnkar*]: crude Borax (q.v.).

TINCHEL, n. *tĩn'chēl* [Gael. *timchioll*, a circuit, a compass]: in *Scot.*, a large number of sportsmen who, having surrounded an extensive space, gradually close in upon their game; also **TIN'CHILL**, *-chīl*.

TINCT, v. *tĩngkt* [L. *tinctus*, pp. of *tingĕrē*, to color]: in *OE.*, to color; same as **TAINT** (q.v.): **ADJ.** in *OE.*, colored; stained: **N.** in *OE.*, color; stain.

TINCTURE, n. *tĩngk'tūr* [L. *tinctūra*, a dyeing; *tinctus*, pp. of *tingĕrē*, to dye; It. *tintura*; F. *teinture*, dye, tincture]: the color with which anything is impregnated; a tinge of color; tint; hue; in *her.*, one of the colors used in achievements (see **HERALDRY**); a slight taste or quality added to anything; a liquid extract; in *med.*, a solution, generally in spirit, of the active principles of any substance (see below): **V.** to impregnate with any foreign matter; to communicate a portion of anything foreign; to imbue the mind. **TINC'TURING**, imp. **TINC'TURED**, pp. *-tūrd*. **TINCTORIAL**, a. *tĩngk-tō'rī-āl*, containing or imparting color.

TINCTURE: commonly, alcoholic solution of vegetal, animal, or some saline substances; sometimes ammonia is added to the alcohol—when the solution is known as *ammoniated tincture*; solutions in water and in ether are also prepared, known as *aqueous tinctures* and *ethereal tinctures*. The alcohol employed in preparing tinctures is either the rectified spirit (*U. S. Pharmacopœia*), having specific gravity 0.835, or proof-spirit, specific gravity 0.941. Tinctures made with 0.835 spirit (pure alcohol) are precipitated by water, and therefore are seldom used internally; those prepared with proof spirit are commonly employed as infusions, decoctions, etc. Full directions for making tinctures are found in the *U. S. Pharmacopœia* in all its editions.

TIND, v. *tĩnd* [AS. *tendan*; Dan. *tænde*; Sw. *tända*, to kindle (see also **TINDER**)]: in *prov. Eng.* and *OE.*, to light or kindle.

TINDAL, MATTHEW: English deistical writer: 1656-1733, Aug. 16; son of a clergyman at Beer-ferris, in Devonshire. He was educated at Lincoln and Exeter colleges, Oxford; took the degree B.A. 1676; and soon afterward was elected fellow of All Souls' College. In 1685 he became a doctor of law; and after a brief lapse into Romanism, during the reign of James II., reverted to Protestantism, or rather, as events showed, into rationalism. His first work was *An Essay concerning Obedience to the Supreme Powers*, etc. (Lond. 1693), followed by *An Essay concerning the Laws of Nations and the Rights of Sovereigns*; but it was not till 1706 that he attracted much notice, when the publication of his treatise on *The Rights of the Christian Church asserted against the Romish and all other Priests who claim an independent power over it; with a Preface concerning the Government of the Church of England, as by Law established*, raised a storm of opposition. A torrent of replies and refutations poured from the press. Among those who signalized themselves as adversaries of T., the least obscure were Dr. G. Hickes and Conyers Place: Swift also indulged in some 'Remarks.' On the continent, T.'s work was favorably received. Le Clerc, in *Bibliothèque Choisie*, praises it highly, as one of the solidest defenses of Protestantism ever written. In 1730, when T. had nearly reached the age of 73, he published his most notable and popular treatise, *Christianity as Old as the Creation, or the Gospel a Republication of the Religion of Nature*. The design of the work, which is written in excellent English, is to strip religion 'of the additions which policy, mistake, and the circumstances of the time have made to it'—in other words, to eliminate the supernatural element of Christianity, and to prove that its morality, which is admitted to be worthy of an 'infinitely wise and good God,' is its true and only claim to the reverence of mankind. His argument is based on a pure assumption—that the true religion, being from God, must therefore necessarily be eternal, universal, simple, and perfect, and can consist of nothing but the practice of morality. In Christianity as the true religion, reason must be supreme above all positive revelation whether of doctrine or precept. The argument takes no note whatever of the historical facts in man's religious development. T.'s purpose was rather constructive than destructive; and he called himself a 'Christian Deist.' He was answered by Dr. Waterland, Foster (eminent dissenting minister), Dr. Conybeare (afterward bp. of Bristol), and Dr. Leland (q.v.), with various degrees of ability and success.

TINDER, n. *tín'dér* [Sw. *tindra*, to sparkle; *tunder*, tinder: Icel. *tendra*, to light a fire; *tundr*, tinder: Ger. *zunder*, tinder; *anzünden*, to kindle: comp. Gael. *teine*, a fire]: any very inflammable material, usually partially burnt linen, used for obtaining fire by striking a spark among it by means of a flint and steel, formerly one of the chief means of procuring fire before the introduction of Matches (q.v.). Partially decayed wood, especially that of willows and other similar trees, also affords tinder: and certain

fungi furnish the German tinder, or amadou (see AMADOU: PUNK: SPUNK). TIN'DERY, a. -ŷ, or TINDER-LIKE, a. like tinder; inflammable. TINDER-ORE, an impure arsenical sulphide of antimony and lead, occurring in soft flexible flakes resembling tinder, of a dirty-reddish color.

TINE, n. *tīn* [Icel. *tindr*; Sw. *tinne*, the tooth of a rake or harrow: Ger. *zinne*; Dan. *tinde*, a pinnacle: Dan. *tand*, a tooth: allied to TOOTH]: the point of the fork of a deer's horn; one of the spikes of a fork or of a harrow; a prong.

TINED, a. *tīnd*, furnished with tines.

TINE, v. *tīn* [see TIND]: in *OE.*, to kindle; to burn; to rage; to smart. TI'NING, imp.

TINED, pp. *tīnd*.

TINE, n. *tīn* [see TEEN 1]: in *OE.*, trouble; distress.

TINE, v. *tīn* [Icel. *tyna*, to lose]: in *Scot.*, to lose or be lost; also spelled TYNE.

TINEA, n. *tīn'ē-ă* [L. *tinēa*, a gnawing worm]: a parasitic disease of the skin, and especially of the scalp. For three of the most important varieties of T., viz., *T. circinata* (ringworm of the body), *T. tonsurans* (ringworm of the scalp), and *T. sycosis* (ringworm of the beard), see RINGWORM. In these three varieties, included in the general term *T. tonsurans*, the vegetable parasite known as *Trichophyton tonsurans*, figured in the above article, is always present.—It remains to notice the *Tinea decalvans* of Bateman, known also as *Porrigio decalvans*, *Alopecia circumscripta*, etc. It is defined by Aitken as 'a fungus disease, causing the formation of rounded or oval patches of baldness, sometimes solitary, more generally multiple. It affects the hairy scalp principally; but the beard and hairy portion of the skin may also suffer.' The fungus which causes these patches of baldness was detected by Gruby 1843, and named the *Microsporon Audonini*: it differs from the *Trichophyton* by its numerous waved filaments and the extremely small size of its sporules, likewise by its position, not being found in the interior of the root of the hair, but forming a little tube round each hair, and thus causing it to soften and break down. The hairs thus affected become dull and partially loose; the



Fungus in *Tinea decalvans*:

AF, lower part of an affected hair, highly magnified; FG, its root; C, spheroidal swelling due to accumulation of spores. E, between the longitudinal fibres of the hair; D, rupture of long fibres; I, sporules and tubes of the parasite; II, a group of sporules proceeding from G, the ruptured root.

(From Aitken's *Science and Practice of Medicine*.)

hairs thus affected become dull and partially loose; the

TINEIDÆ—TINGI.

skin in which they are implanted becomes red, swollen, and slightly itchy; and a whitish matter (sporules of the fungus) may soon be observed on the diseased skin and hairs. The hairs then suddenly fall off from the affected part, leaving a round bald patch of very white color. The disease is capable of transmission from one person to another, though less readily than *Tinea tonsurans*. It affects children chiefly. The treatment consists in preventing the spread of the disease by extracting the hairs round the circumference of the patch and washing the head daily with soft soap; and all the young hairs within the patch must be extracted till a healthy crop begins to appear. Moreover, a solution of sulphurous acid, as recommended for ringworm, should be applied. When by these means the fungus has been destroyed, stimulants must be applied to the bald patches. A mixture of equal parts of *Collodium* and of *Ether cantharidalis* (*Collodium vesicans*) has been recommended for stimulant in these cases.

TINEIDÆ, *tī-nē'ī-dē*: family of small moths, smallest insects of the lepidopterous order. The body is long and slender, wings entire, often narrow, mostly convoluted in repose. Many of them are very brilliantly colored, exhibiting beautiful little stripes and patches of gold and silver. Many deposit their eggs in animal substances, on which the larvæ feed, making cases for themselves out of the substance that they feed on. The Clothes-moths (q.v.) are a familiar example.

TINFOIL: see under **TIN**.

TING, n. *tīng* [imitative of the sound]; the sharper sound of a bell—the deeper tone is called **TONG**, and the combination is **TING-TONG**, usually spelled **DING-DONG** (q.v.).

TING: for **THING**, which see.

TINGE, v. *tīnj* [L. *tingo*, I moisten, I dye: F. *teindre*, to dye or color]: to color or stain; to impregnate slightly with something foreign; to dye; to communicate in a slight degree the taste or qualities of a substance: N. a slight degree of color or taste derived from some other substance. **TING'ING**, imp. **TINGED**, pp. *tīnjd*.

TINGI, *tīng'gī* (*Magonia glabrata*): tree of nat. order *Sapindaceæ*, which covers large tracts of country in parts of Brazil, excluding almost everything else, growing usually to the height of 30 or 40 ft., sometimes much higher. An infusion of the bark of the roots is used to poison fish. The fruit is a large dry triangular capsule, filled with broad flat seeds, from which a kind of soap is made. The membrane which covers the cotyledons is stripped off, and they are steeped in water till they begin to swell and soften, and boiled with a little tallow. A homogeneous mass is formed, which is used for washing clothes.

TINGLE—TINNITUS AURIUM.

TINGLE, *v.* *tĭng'gl* [imitative of the sound of a small bell, represented in different languages by the syllables *tin*, *ting*, *tink*, *tang*, *twang*: *L.* *tinnĭrē*, to ring: *F.* *tinter*, to ring, to tingle; *tinton*, the ting of a bell: *Dut.* *tintelen*, to tingle as with cold]: to feel a prickling or stinging sensation, generally disagreeable and painful, but sometimes imparting a degree of pleasure; to tinkle. **TIN'GLING**, *imp.-gling*: *N.* a thrilling sensation; a noise in the ears. **TINGLED**, *pp.* *tĭng'gld*.

TINKAL, *n.* *tĭng'kāl*: see **TINCAL**.

TINKAR'S ROOT, *tĭng'kārz rōt* (*Triosteum perfoliatum*): shrubby plant of nat. order *Caprifoliaceæ*, native of N. America. Its root is used as an emetic and mild cathartic. It is named from a physician who brought it into notice.

TINKER, *n.* *tĭng'kēr* [imitative of the *tinking* or clinking sound of working or hammering metal: probably *Scot.* *tink*, to rivet, the noise so made: *W.* *tincerdd*, a tinker; *tincian*, to tinkle]: a mender of pots and pans, especially such as are made of tin-plate; any mender or botcher: *V.* to work as a tinker; to patch up coarsely; to cobble; to botch. **TIN'KERING**, *imp.*: *N.* the employment of a tinker; the act of patching up coarsely. **TIN'KERED**, *pp.* *-kērd*.

TINKLE, *v.* *tĭng'kl* [imitative of the sound of small bells (see **TINGLE**)]: to make or give out a succession of small, quick, sharp sounds, as of little bells or pieces of metal; to cause to clink; to tingle: *N.* a clink; a sharp quick noise. **TIN'KLING**, *imp.*: **ADJ.** making a sharp quick noise: *N.* a small, quick, sharp sound, as of a small bell. **TINKLED**, *pp.* *tĭng'kld*.

TINNÉ, *tĭn-nā'*: name given to a group of aboriginal tribes in the region between Hudson Bay and the centre of Alaska. They are of the Athabaskan family; are of tall stature and have some beard; their complexion is dark and their faces full. Their weapons are exceedingly primitive, made of stone and of bone. The *T.* are hunters and fishers.

TINNED, **TINNER**, **TINNING**, **TINNY**: see **TIN**.

TINNEVELLY, *tĭn-nē-vèl'lē* (*Tiru-nel-vēli*): chief town of the Brit. dist. of *T.*; near the river Chindinthoora, 350 m. s.w. of Madras. The town of *T.* is connected with the town and military station of Pallamcottah, on the opposite bank of the river.—*Pop.* (1881) 23,221.

TINNITUS AURIUM, *tĭn-nĭ'tūs aw'rĭ-ūm* [Latin]: ringing in the ears. In most cases it is an unimportant symptom, depending on some local temporary affection of the ear, or on some disturbance of the digestive system with which the part of the brain from which the auditory nerve springs sympathizes, or which excites the cerebral circulation (as often occurs in the morning after too liberal evening potations); but as it is also a common symptom of organic disease of the auditory nerve, it may indicate a dangerous condition, or may be a prelude to complete deafness. Hence, though commonly of no consequence, if permanent, it should be carefully watched. It may be induced for a few hours by a large dose of quinia,

TINOS—TINTINNABULAR.

TINOS, *tě'nos*, or **TINO**, *tě'nō* (anc. *Tenos*): island in the Grecian archipelago, belonging to the group of the Cyclades; s.e. of the island of Andros, 53 m. off the coast of Bœotia; 18 m. long, 8 m. in extreme breadth; 70 sq. m. The Tenians were conspicuous among anc. Greeks for their industry, and still maintain that pre-eminence. The island is carefully cultivated, well-watered, has a delightful climate, and is very productive in silk, wine, barley, and fruits. Silk gloves and stockings are manufactured; and the inhabitants are famous workers in marble, which is found in the island. In the modern town of Tenos, or St. Nicholas, is a cathedral of white marble, a favorite resort for pilgrims.—Pop. about 13,000.

TINSEL, n. *tĭn'sĕl* [OF. *estincelle*; F. *étincelle*, a sparkling, a spangle—from L. *scintilla*, a spark]: a loose tissue interwoven with shining thread of silver or gold—used largely for theatrical purposes, and in embroidery, etc.; something very shining and gaudy; something showy, or having a false lustre, but without value: **ADJ.** gaudy; showy to excess; superficial: **V.** to adorn with something glittering, but not of much value; to make gaudy. **TIN'-SELLING**, imp. **TIN'SELLED**, pp. *-sĕld*.

TINSEL, n. *tĭn'sĕl* [Scot. *tine*, *tyne*, to lose (see **TINE** 4)]: in *Scot.*, loss. **TINSEL OF THE FEU**, in *Scots law*, forfeiture of a feu-right owing to non-payment of feu-duty for two whole years: see **FEU**.

TINT, n. *tĭnt* [L. *tinctus*, pp. of *tingĕrĕ*, to color, to tinge: It. *tinta*; F. *teint*, dye, hue]: a slight coloring distinct from the ground or principal color; a shade; a hue of color; the different degrees of intensity and strength of color in a pigment: **V.** to give a slight coloring to. **TINT'-ING**, imp.: **N.** a forming or imparting of tints. **TINT'ED**, pp.: **ADJ.** slightly stained or dyed; tinged. **TINT'LESS**, a. *-lĕs*, having no color.

TINTERN AB'BEY, *tĭn'tĕrn*: famous ecclesiastical ruin on the right bank of the Wye, in Monmouthshire, England; about 9 m. s.s.e. of Monmouth. The Abbey—properly so called—was founded 1131 for Cistercian monks, by Walter de Clare, and dedicated to St. Mary; but in the previous century a church had been built: mass was celebrated by abbot and monks first in 1268. The style of architecture is a transition from Early English to Decorated, and is very fine. Most of the building, except the roof and tower, remains. **T. A.** owes not a little of its celebrity to Wordsworth's poem, *Lines composed a few Miles above Tintern Abbey, on revisiting the Banks of the Wye*—though the Abbey is not mentioned or alluded to in the poem.

TINTINNABULAR, a. *tĭn'tĭn-năb'ŭ-lĕr*, or **TIN'TIN-NAB'ULARY**, a. *-lĕr-ĭ* [L. *tintinnab'ŭlum*, a bell—from *tĭnnŭrĕ*, to ring, to jingle: an imitative word]: relating to or connected with a bell; making the sound of a bell. **TIN'-TINNAB'ULANT**, a. *-ŭ-lĭnt*, same as **TINTINNABULAR**. **TIN'-TINNAB'ULA'TION**, n. *-lă'shŭn*, a tinkling sound as of a bell.

TINTORETTO—TIP.

TINTORETTO, *tĭn-to-rĕt'to* (real name, JACOPO ROBUSTI, *yá'ko-pĭ bós'tē*): Venetian historical painter, called T. (Little Dyer) from his father's occupation as dyer (*Tintore*): 1518, Sep. 16—1594, May 31 (according to dates in the register of deaths in S. Marciliano); b. Venice. He studied for a few days under Titian, but appears to have been mostly self-taught. His assiduity, when young, in acquiring a varied knowledge of the human figure under all possible aspects of light and shade, commands respect, in spite of the theatrical means to which he often resorted: and the rapidity of his pencil (which got him the name *Il Furioso*) is astonishing. Sebastian del Piombo remarked that T. could paint as much in two days as he could do in two years. A catalogue of T.'s works, specimens of which are in almost all galleries, is impossible within our limits: the following are a few of the more famous: *Belshazzar's Feast*, and *the Writing upon the Wall* (fresco, for the Arsenal at Venice), *The Tiburtine Sibyl*, *The Last Supper*, and *the Washing of the Disciples' Feet*, *A Crucifixion*, *The Worship of the Golden Calf*, *The Last Judgment* (the last two immense pictures 50 ft. high and splendid in conception), *St. Agnes restoring to Life the Son of a Prefect*, *The Miracle of St. Mark*, a *Resurrection of Christ*, *The Slaughter of the Innocents*, and a grand picture of *Paradise*—34 ft. high by 74 long, with more than 100 figures, reputed the largest picture ever painted on canvas. Some of T.'s earlier pictures are carefully finished; but his later ones are dashed off with a fatal haste, that justifies the remark of Annibal Caracci that, if he 'was sometimes equal to Titian, he was often inferior to Tintoretto.' T. lavishly indulged in *chiaro-oscuro*, but his coloring is not gay or brilliant; it is rather cold and leaden, as might be expected of a painter who, when asked what were the prettiest colors, replied; 'Black and white.' He was never precise, often incorrect as judged by the standards; but was among the most original, audacious, and imaginative of painters.

TINY, a. *tĭnĭ* [imitative of making the voice pipy to express something very small: Gael. *tana*, thin, slender: Dan. *tynd*, thin]: very small; little; puny. **TY'NIER**, compar. *-ér*. **TY'NIEST**, superl. *-ĕst*.

TIP, n. *tĭp* [Dut. *tip*, a point: Ger. *zipfel*, a tip, a corner: Icel. *toppr*; Dan. *top*, top, summit]: the point or extremity of anything small, as of the finger or tongue; the end; a light quick movement; a slight blow; in *slang*, a hint; a small present in money: V. to form a point to; to cover on the top or end, as to *tip* with gold; to strike lightly; in *slang*, to give a hint or wink; to make a present in money. **TIP'PING**, imp.: N. in *music*, a distinct articulation given to the flute by striking the tongue against the roof of the mouth. **TIPPED**, or **TIPT**, pp. *tipt*, having the top or end covered. **TIP-CAT**, n. game in which a small piece of wood tapering to a point at each end, and called a cat, is made to rebound from the ground by being struck on the tip with a stick. **TIPSTAFF**, n. a staff tipped with metal; an officer who bears a staff tipped with metal; a constable—plu. **TIPSTAVES** **TIP'STER**, n. *-stér*, in *sporting slang*, one who supplies tips.

TIPPECANOE—TIPPERARY.

or information regarding races; a sporting prophet. **TIP-TOE**, n. the point of the toe. **ON THE TIPTOE OF EXPECTATION**, eagerly alive in regard to the coming or happening of something. **ON THE TIP OF THE TONGUE**, on the point of being uttered. **TIPTOP**, a. highest; supreme; superb; N. the highest or utmost degree; the extreme. **TO TIP THE WINK**, in *slang*, to intimate to another by means of a wink. **TO TIP OVER**, or **TO TIP UP**, to overturn lightly. **TO TIP OFF**, to drink all up at one gulp.

TIPPECANOE, *tĭp-ĕ-ka-nŏ'*, RIVER: stream in Indiana, rising in T. Lake in the n. part of the state, flowing s.w. 200 m., and emptying into the Wabash 9 m. above Lafayette. It is famous for the battle on its banks.—The **BATTLE OF TIPPECANOE**, 1811, Nov. 5, was fought by Gen. William H. Harrison against the Indians under Tecumseh's brother, the prophet. Tecumseh himself was absent from the tribe, attempting to form an alliance with tribes further s. for hostilities against the whites. Gen. Harrison distrusted the 'prophet,' and thought it better to build a milit. post near T., the 'prophet's' village, than to carry out the plan of the govt. and forcibly seize the Indian leader. He built a fort near the site of Terre Haute in Oct., and, leaving a garrison there, marched toward T. When within 1½ m. of the Indian village, he was met by messengers from the 'prophet' demanding a parley, and a council was proposed for the next day. While the army of 300 regulars and 500 militiamen were sound asleep, the Indians suddenly attacked the camp at 4 o'clock in the morning. A desperate fight ensued, lasting till daylight; and the Indians were finally defeated, and were dispersed by the cavalry. The U. S. forces lost 108 in killed and wounded, and the Indians left 40 of their number dead on the field. The Indians immediately evacuated their village, and on the following day the troops burned it. In 1839, when Gen. Harrison and John Tyler were candidates for pres. and vice-pres., the battle of T. was recalled in a popular campaign cry, 'Old Tippecanoe and Tyler too!'

TIPPERARY, *tĭp-ĕr-ā'rĭ*: inland county of the province of Munster, Ireland; bounded s. by Waterford, w. by Cork, Limerick, Clare, and Galway; 1,659 sq. m., or 1,061,731 acres, of which 843,837 are arable, 178,183 uncultivated. Pop. (1871) 216,713, of whom 203,227 were Catholics, 13,459 Protestants; (1881) 199,004, mostly Rom. Catholics. The inhabitants are chiefly engaged in agriculture. Pop. (1891) 172,882; (1901) 160,232.

The county of T. is mostly in the basin of the river Suir. There are many little lakes. The county is intersected by two railways. The surface is generally somewhat level: among the hills are the Galtees (3,000 ft. high), Knockmeledown (2,700 ft.), and Keeper Mountain (2,100 ft.). There is a singular height called the Devil's Bit, to which many popular legends attach. The soil of the plain is a rich calcareous loam, singularly fertile, especially a district called the Golden Vein, in the centre of which is the town of Tipperary (q.v.). In geological formation the plain belongs to the great central limestone district. The hills are

TIPPERARY—TIPPOO SAHIB

mostly of clay-slate, surrounded or surmounted by sandstone. There is much bog in the central and e. districts, one continuous tract extending 30 m. The mineral productions are coal (anthracite), copper, lead, zinc, and fire-clay; also excellent slates. Dairy-farming and raising of cattle have largely taken the place of the production of cereals. Flax is sparingly produced.

Anciently T. formed part of the two distinct principalities of Ormond, or North Munster, and Desmond, or South Munster: after the English invasion, T. was formed into a county by King John 1210; but the authority of the conquerors was long little more than nominal. Eventually it was divided between the Anglo-Norman families of Butler, which held Ormond, and Geraldine, to whom a portion of Desmond fell. The Anglo-Norman and Celtic antiquities are numerous: the city of Cashel, presenting, in the ruin of Holy Cross, a noble specimen of the monastic remains of the mediæval period, and the castle of Cahir exhibiting the military and baronial architecture of the same age. There is a series of curious caves near the border of the county of Cork.

TIPPERARY: market-town of the county of T., Ireland; on the river Arra, 110 m. s.w. from Dublin by railway. T. has an extensive trade in butter. The town is very ancient, and soon after the invasion was occupied as a strong place by the English, who built a castle in it during the Irish expedition of King John. The town is well built and contains a large and handsome Rom. Cath. church and several Prot. churches.—Pop. (1891) 6,391.

TIPPET, n. *tĭp'pĕt* [AS. *tæppet*, a tippet—from L. *tapētē*, cloth—from Gr. *tapēs*, a carpet]: a narrow garment or covering of fur or cloth for the neck and shoulder.

TIPPLE, v. *tĭp'pl* [Bav. *zipfel*, a corner of anything, a small portion: prov. Eng. *tip*, a draught of liquor: Low Ger. *tippl*, a dot, a fine drop: Norw. *tipla*, to drip slowly, to sip]: to drink intoxicating liquors frequently in small quantities or to excess: N. an excess in drinking intoxicating liquors: the liquor taken in tippling. **TIPPLING**, imp. *-pling*: ADJ. indulging in the habitual use of intoxicating liquors: N. the habitual use of strong liquors; a drinking to excess. **TIPPLED**, pp. *tĭp'pld*: ADJ. intoxicated. **TIPPLER**, n. *-plēr*, one who tipples. **TIPPLING-HOUSE**, a shop where intoxicating liquors are retailed to be drunk on the premises; a dram-shop.

TIPPOO SAHIB, *tĭp-pō' sâ'hĭb*, Sultan of Mysore: 1749–1799, May 4; son of Hyder Ali (q.v.). Efforts were made to instruct him in Mohammedan learning; but T. preferred athletic exercises and the companionship of the French officers in his father's service, from whom he learned European military tactics. This knowledge he afterward put to effective use during his father's wars with the British. On the death of his father, he was crowned with little ceremony, returning at once to the head of his army, which was then engaged with the British near Arcot. In 1783 he captured and put to death most of the

garrison of Bednore; but when his French allies had news of the peace between France and England, they retired from his service; and T. agreed to a treaty 1784, stipulating for the *status quo* before the war. His inveterate hatred of the English led him to invade the protected state of Travancore; and in the war (1790–1792) the British, under Colonel Stuart and Lord Cornwallis, were aided by the Mahrattas and the Nizam, who detested their powerful neighbor (T. being a fanatical Mohammedan); and though he laid waste the Carnatic almost to the gates of Madras, he was ultimately compelled (1792, Mar. 16) to resign one-half of his dominions, pay an indemnity, and give his two sons as hostages for his fidelity. Nevertheless, his secret intrigues in India against the British were almost immediately resumed; another embassy was sent to the French; and the invasion of Egypt by the latter in 1798, and T.'s machinations, having almost simultaneously become known to the gov.gen., hostilities were begun 1799, Mar.; and two months afterward T. was driven from the open field, attacked in his capital of Seringapatam, and, after a gallant resistance, slain. His government of Mysore after 1792 was oppressive; yet T. was extremely popular, and after his death was esteemed by the Mohammedans as a martyr to the faith of Islam.

TIPSTAFF, n. *tĭp'stáf*: see under TIP.

TIPSY, a. *tĭp'sĭ* [Swab. *tapps*; Swiss, *tips*, a fuddling with drink: Swiss, *tipseln*, to fuddle one's self: connected with TIPPLE]: affected with liquor; slightly intoxicated. TIP'SILY, ad. *-lĭ*. TIP'SINESS, n. *-nĕs*, the state of being tipsy.

TIPTOE, TIPTOP: see under TIP.

TIPULARY, a. *tĭp'ŭ-lĕr-ĭ* [L. *tĭp'ŭla*, an insect that runs swiftly over the water]: of or pertaining to insects of the genus *Tipŭla*, or the crane-fly kind.

TIP'ULA AND TIPU'LIDÆ: see CRANE-FLY.

TIRABOSCHI, *tĕ-râ-bos'kĕ*, GIROLAMO: Italian author: 1731, Dec. 18—1794, June 3; b. Bergamo. He studied at Monza, and entered the order of the Jesuits. Toward 1766 he was appointed prof. of rhetoric at Milan, where he wrote his first work, *Vetera Humiliatorum Monumenta* (1766); and 1770 succeeded Granelli as librarian to the Duke of Modena. T. now availed himself of the rich stores of the ducal library, besides making extensive researches in other archives, to compose *Storia della Letteratura Italiana* (History of Italian Literature) (13 vols. 1771–82; best ed., Milan, 16 vols. 1822–26). It embraces the history of ancient and modern Italy, and is especially valuable for the light which it throws on the intellectual condition of the peninsula during the dark ages, and the brilliant period from Dante to Tasso. T. ends his elaborate survey with the 17th c. It is impossible to praise too highly the learning and the conscientious accuracy of the author, even though minute and special investigations of many of the epochs have since necessitated revision of parts of the work. Abridged translations have appeared in

TIRADE—TIRÉE.

TRENCH and **GERMAN**. A continuation embracing the literature of the 18th c. was written by Lombardi (*Storia della Letteratura Italiana nel Secolo XVIII.*). **T.** died at Modena. Other works by him are *Biblioteca Modenese* (6 vols. Mod. 1781–86); *Memorie Storiche Modenesi* (3 vols. Mod. 1793).

TIRADE, n. *tī-rād'* [F. *tirade*, a long train of words—from F. *tirer*, to draw]: a long train of words; a long-drawn passage or sequence of expression on a single theme; a long-drawn declamatory outpour of words, especially in censure or reproof.

TIRAILLEUR, n. *tīr'ī-yér'* [F.]: one of a body of sharpshooters thrown out from the main body of an army, put in front to annoy the enemy; a skirmisher.

TIRE, n. *tīr* [an abbreviation of **ATTIRE**, which see]: in *OE.*, a head-dress; attire; furniture; apparatus: V. in *OE.*, to dress the head by doing up the hair; adorn; attire. **TIRE-WOMAN**, a female head-dresser; a milliner; a dresser in a theatre. **TIRING-ROOM**, the dressing-room of a theatre. **TIRING-HOUSE**, in *OE.*, a tiring-room.

TIRE, n. *tīr* [from *tie*, to fasten or bind]: a heavy band or hoop of iron placed around a wheel to form the tread and to tie or bind the felloes of wheels together.

TIRE, v. *tīr* [AS. *teran*, to break, to tear: Low Ger. *teren*, to pull, to plague: Sw. *tæra*, to rub, to wear away: AS. *tirian*, to vex, to irritate: O. Dut. *tergen*; Dan. *tærge*; Ger. *zergen*, to irritate: Dan. *tirre*, to tease, to worry—*lit.*, to provoke, irritate, or harass]: to wear out and fatigue; to weary; to exhaust the strength by labor; to be fatigued; to fail with weariness; to have the patience exhausted. **TIRING**, imp. *tīr'ing*. **TIRED**, pp. *tīrd*: **ADJ.** weary; fatigued; jaded. **TIREDNESS**, n. *tīrd'nēs*, the state of being wearied. To **TIRE OUT**, to weary or fatigue beyond further exertion; to exhaust the patience of. **TIRESOME**, a. *tīr'-sūm*, fatiguing; wearisome; tedious; exhausting patience. **TIRE'SOMELY**, ad. *-lī*. **TIRE'SOMENESS**, n. *-nēs*, the quality or state of being tiresome; tediousness.—**SYN.** of 'tire': to weary; fatigue; exhaust; harass; jade.

TIRE, v. *tīr* [Icel. *tæra*; Low Ger. *teren*; Ger. *zehren*, to consume (see **TEAR** 2)]: in *OE.*, to draw; pull; seize; tear; pull apart and prey upon, as birds of prey. **TIR'ING**, imp. **TIRED**, pp. *tīrd*.

TIRE, or **TIER**, n. *tēr* [OF. *tiere*, rank, order: Low Ger. *tier*, a row of connected things (see **TIER**)]: in *OE.*, a row or rank; in *mil.*, guns, shot, and shells, etc., placed in a regular form.

TIRÉE, *tī-rē'*: an island of the Inner Hebrides, included in Argyleshire, Scotland; 20 m. n.w. of Iona; 13 m. long, and about 6 m. in extreme breadth. The surface is low, rising in the n. little above 20 ft., and in the s. to about 400 ft. above sea-level. It is without trees and shrubs, and has numerous small lakes. Remains of Scandinavian forts dot the shores, and standing-stones, ruined churches, and ancient graves are found in the interior.—Pop. (1881) 2,730.

TIRESIAS, *tī-rē'shī-as*, in Greek Mythology: famous prophet, who, according to one legend, was struck blind by the goddess Athena because he had seen her bathing. Another legend represents Hera as depriving him of his sight because, being made arbiter in the dispute between her and Zeus, he had decided in favor of Zeus; when Zeus as a compensation granted him the inner vision of prophecy, and prolonged his life for several generations; but T. at last found death by drinking from the well of Tilphossa. There are many variations of his legend in the myths of Greece. According to Homer, T. was the only human being in the regions of the dead whom Proserpine allowed to retain intelligence. T. is the theme of a fine poem by Lord Tennyson (1885).

TIRL, v. *têrl* [a form of **THIRL** 1]: in *Scot.*, to vibrate; move tremulously; twirl; shake. **TIR'LING**, imp. **TIRLED**, pp. *têrld*. To **TIRL AT THE PIN**, to shake or rattle the thumb-piece of a latch before opening the door.

TIRLEMONT, *tîrl-mōng'* (Flemish, *Thienen*): town of Belgium, in S. Brabant, on the Great Geete, about 30 m. e.s.e. of Brussels, on the Brussels and Cologne railway. The church of St. Germain, on an eminence, dates apparently from the 9th c., and contains an altar-piece by Wappers. Beer and hosiery are manufactured. T. was ravaged by Marlborough 1705; and here the French under Dumouriez defeated the Austrians 1793.—Pop. (1876) 13,296; (1888) 15,315.

TIRNOVA, *tîr'no-vâ*: town in the principality of Bulgaria, on the Jantra, 35 m. s.s.e. of Sistova. It was formerly the chief town of Bulgaria; and since 1878 (see **BULGARIA**) it is again the seat of the national govt. There are numerous mosques, churches, and synagogues; dyeing is carried on, and silk and coarse cloth are manufactured.—Pop. (1888) 11,314.

TIRO, n. *tî'rō*: same as **TYRO** (q.v.).

TIROLITE, n., or **TYROLITE**, n. *tîr'ō-līt* [so called from being found in many parts of the *Tyrol*; Gr. *lithos*, a stone]: copper-froth; a fine verdigris-green or azure-blue carbonate of copper and arsenic.

T-IRON, n. *tē-ī'êrn*: rolled bar-iron, shaped, when cut in sections, like the letter T.

TIRRIT, n. *tîr'rīt* [comp. Gael. *tuireadh*, a lament, a dirge]: in *OE.*, a lamentation; a complaint; a wail.

TIRYNS, *tî'rīnz*: small city of Argolis, in the Peloponnesus, in the prehistoric period of Greece, long before the Dorian immigration; about 3 m. from the sea, s.e. of Argos, near the head of the Argolic Gulf. According to the common tradition, it was founded by Prætus, a mythic king of Argolis; and its massive walls, like other rude massive structures in Greece of unknown antiquity, were reputed the work of the Cyclopes. Prætus is said to have been succeeded by Perseus; and in this place Hercules was believed to have passed his youth. At the time of the Trojan war, T. appears to have been subject to the kings of Argos. Its greatest prosperity was in B.C. 11th

TIS—TISCHENDORF.

and 10th c. Some time (probably about B.C. 468) after the battle of Plataea (to which the Tiryinthians sent troops), the city was taken by the Argives, and destroyed—the walls of the citadel only being left standing, the wonder and admiration of later ages.—T. affords one of the most interesting specimens of Cyclopean architecture, the ruins of this place, and those of the neighboring city of Mycenæ, being the grandest in Greece. The ruins of T. illustrate the Homeric palaces of a thousand years before Christ. The Acropolis, or citadel of T., was on the summit of a low, flat, rocky hill, rising abruptly out of the dead level of the plain of Argos, and appears to have consisted of an upper and a lower inclosure of nearly equal size, with an intermediate platform. There were two main entrances, on the e. and on the s. sides, with a postern on the w. The entire circuit of the walls still remains more or less preserved; they are more than 20 ft. in thickness—their lower courses of unhewn stones of enormous size, rudely piled in tiers one above the other, without mortar or cement, the interstices being filled with smaller stones, and the whole bedded in clay: above were courses of sundried brick. The upper story was probably of wood. There are several covered galleries of singular construction in the body of the wall, on the e. and the s. sides, the roof being formed by sloping the courses of masonry on each side of the passage at an angle to each other. One of the galleries has six recesses, or niches, on the outer side of the walls, intended probably to facilitate defense. At the top the wall was covered in parts with a colonnade of wooden pillars resting on stone blocks.—Dr. Schliemann's interesting and important excavations in 1884–5 are described in his *Tiryns* (Lond. 1886).

'TIS, *tīz*: a contr. of IT is.

TISANE, or TISAN, n. *tīs'ān* [F. *tisane*—from L. *ptisāna*; Gr. *ptisānē*, barley crushed and cleaned]: a drink for a sick person; an infusion made of certain herbs, leaves or flowers, used medicinally, especially in France; diet-drink: see PTISAN.

TISCHENDORF, *tīsh'ēn-dorf*, LOBEGOTT FRIEDRICH KONSTANTIN VON, LL.D., D.C.L., Count: eminent biblical critic: 1815, Jan. 18—1874, Dec. 7; b. Lengenfeld, in Saxony. He was educated at the Univ. of Leipzig, and under the influence of Winer engaged ardently in critical study of the New Test., early becoming convinced of the need of more exact collations of MSS. At Paris (1840, Oct.—1843, Jan.) his decipherment of the previously illegible *Codex Ephraemi Rescriptus* gave him his first wide repute. His journeys and labors in search of the best and rarest biblical MSS., in which he was liberally assisted by the Saxon and Russian governments, had results exceedingly valuable. From the convent of St. Catharine, on Mt. Sinai, where T. was entertained by the monks, he brought 43 leaves (of the 345½ leaves) of one of the greatest biblical treasures extant—the Sinaitic Codex (q.v.). These precious leaves he accidentally noticed in the basket of

papers furnished him for kindling his fire. On a second journey 1859, he secured the remainder as a present to the czar of Russia. Among the most important of his many works are the editions of the *Sinaitic MS.* (1862, 63, 65), the *Eighth Critical Edition of the New Testament* (1864-72), and *Monumenta Sacra Inedita* (1855-70). After being an extraordinary and ordinary prof. at Leipzig from 1845, he became prof. of theology and of biblical paleography 1859, a chair in the latter subject having been instituted for him. The results of T.'s labors in New Test. criticism have been among the greatest achieved by any one scholar in modern times. He was created a count of the Russian empire, an LL.D. of Cambridge, a D.C.L. of Oxford, etc. He died at Leipzig.

TISHRI, *tish'rî*, or **TISRI**, n. *tîz'rî* [Heb. *tishri*—from Chald. *shera'*, to open, to begin]: the first month of the Hebrew civil year, and the seventh of the ecclesiastical, answering to parts of our September and October.

TISIC, TISICAL: see **PITHIC**, under **PITHISIS**.

TISSUE, n. *tish'û* [F. *tissu*, woven—from F. *tisser*; L. *texĕrĕ*, to weave]: any woven stuff; cloth interwoven with figured colors, or with gold or silver thread; any thin and delicate texture or fabric; in *anat.* or *bot.*, the minute elementary structures of which organs are composed: a connected series, as a *tissue* of lies: V. to form tissue of; to interweave. **TIS'SUING**, imp. **TIS'SUED**, pp. *-ûd*: **ADJ.** variegated. **TISSUE-PAPER**, a very thin semi-transparent variety of paper. **BAST TISSUE**, modification of woody tissue in which the cells are longer and more elastic. **CELLULAR TISSUE**, the tissue of vegetables which consists wholly of ordinary cells and contains no vessels. **VASCULAR TISSUE** consists of tubes and of wood-cells usually found in bundles. **WOODY TISSUE**, tissue composed of long and slender cells overlapping each other. **VEGETABLE TISSUES** (see **CELL-THEORY**—*Vegetable Histology*: **VASCULAR TISSUE**: **VEGETABLE TISSUES**).

TISSUES, ANIMAL: minute elementary structures of which animal organs and substances are composed. They may be either normal or pathological. For the most important of these T., see their special titles: here is given the view now most common regarding their classification (see **HISTOLOGY**).—The normal T. are divisible, according to Virchow and his followers, into three groups or categories: (1) T. which consist exclusively of cells, when cell lies close to cell; (2) T. in which one cell is regularly separated from the others by an amount of intermediate matter, or intercellular substance; (3) T. in which the cells have attained specific, higher forms of development, by means of which their constitution has acquired an entirely peculiar type. As illustrations of the first group of T., the simple cellular T. in the modern sense (cellular tissue here being quite distinct from areolar or connective tissue), we may take the epithelial formation—e.g., as occurring in the epidermis and the nails, and in the epithelium of mucous and serous membranes, in the

TISSUES.

crystalline lens of the eyes (which is originally a mere accumulation of epidermis), and in the glands. The second group is formed by the connective tissue, which is composed of intercellular substance, with cells of various forms embedded in it, and includes cartilage, fatty tissue, etc. In the third group, which is somewhat heterogeneous, the structures are usually more or less tubular. This group includes the muscles, nerves, and vessels, and Virchow also places the blood in it. This whole arrangement is alto-

gether at variance with those adopted not many years ago.

This arrangement has reference to General Histology (*tissues*, properly so called), while the older had reference to Special Histology, or the structure of organs into which a combination of various tissues may enter. Thus, the



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osseous tissue of general histology

consists of bone-cells + calcified intercellular substance, while *bone as an organ* consists of osseous tissue + medullary tissue + periosteum + vessels + nerves; similarly, nervous tissue is by no means identical with cerebral matter, which additionally contains membranes, vessels, etc.

Morbid T. may be classified on exactly the same plan as the physiological or normal tissues. The belief is gradually extending that there is nothing peculiar or specific in pathological structures, or, in other words, that every pathological tissue has its physiological prototype, and that 'no form of morbid growth arises which cannot in its elements be traced back to some model which had previously maintained an independent existence in the economy.'—Virchow's *Cellular Pathology*, translated by Chance, p. 60. The distinguished pathologist here quoted maintains that there is no other kind of heterology in morbid structures than the abnormal manner in which they arise, and that this abnormality consists either in the production of a structure at a point where it has no business, or at a time when it ought not to be produced, or to an extent at variance with the typical formation of the body; 'but,' he adds, 'practical experience shows us that it would be altogether incorrect to conclude from the mere correspondence of a pathological tissue with a physiological one that the case would continue to follow a benignant course.' The curious bodies provided with large nuclei and nucleoli, which have been described by many pathologists as 'the specific polymorphous cells of cancer,' are merely irregularly developed epithelial cells, such as occur, e.g., in the lining of the urinary passages; and the apparent heterology of other morbid growths may be similarly explained.

TIT.

TIT, n. *tít* [Norw. *tita*; Icel. *títr*, a small bird (see **TOT**): prov. Eng. *titty*, small]: any very small thing; a small horse or woman, in contempt; one of several small birds; specifically, a **Titmouse** (q.v.). **TIT FOR TAT**, a variation of *tip for tap*, 'blow for blow,' an equivalent by way of revenge or repartee. **TIT'LING**, n. *-ling* [Icel. *títlíngr*]: the titlark; the hedge-sparrow. **TITTLE**, n. *tí'tl*, a particle; a minute part; a jot. **TIT'TLE-TAT'TLE**, n. *-tát'tl*, idle trifling talk; an idle trifling talker: V. to talk idly; to engage in senseless talk. **TIT TLE-TAT'TLING**, imp. *-tling*. **TIT'TLE-TAT'TLED**, pp. *-tát'tld*. **TIT'LARK**, a small species of lark. **TIT'MOUSE**, n. *-mows* [Ger. *meise*; Dut. *mees*, a titmouse: not connected with *mouse*]: small insessorial bird of several species; plu. **TIT'MICE** (see **TIT**, below).

TIT, or **TIT'MOUSE**: any bird of the family *Paridæ*. They are small birds, of which there are more than 50 known species, widely distributed throughout Europe, Asia, Africa, and N. America. The popular names **Tit** and **Titmouse** are very generally given to them by English-speaking people. They are bold sprightly birds, extremely active, flitting from branch to branch, running rapidly along branches in quest of insects, and often clinging to the underside of branches with their back downward. They feed not only on insects, but also on grain and seeds, have no objection to carrion, and sometimes kill young and sickly birds by strokes of their bill. They are very pugnacious, and the female tit shows great courage in defense of her nest, often continuing to sit when the nest is approached. In winter, many of the species gather into small flocks, and approach houses and villages. These birds are extremely useful in preventing the multiplication of noxious insects. The **CRESTED T.** (*Parus cristatus*) is a common species in Europe. The **GREAT T.** (*P. major*) is the largest European species; not quite 6 inches long. Its usual note is a kind of chatter, but it sometimes imitates the notes of other birds. The **BLUE T.** (*P. cæruleus*) and the **COAL T.** (*P. ater*) are other species. The **Blue Tit** is perhaps the most pert and audacious of the Brit. species; it is familiarly named *Tomtit*. The upper part of the head is light blue, and a bluish tinge prevails in the plumage. The **LONG-TAILED T.** (*Panurus biarmicus*), common in Britain, has the tail about as long as the body. The **PENDULINE T.** (*Aegithalus pendulinus*) of s. Europe makes an interesting nest, which in form resembles a flask, and is generally suspended at the end of a flexible twig, near to or overhanging water. It is nicely woven of fibres of bark and the down of willow or poplar catkins, and the opening is in the side. The **CHICKADEE** or **BLACKCAP T.** (*Parus atricapillus*) is very common in N. America. The **TUFTED T.** (*Lophophanes bicolor*) is the largest Amer. species. The **BLACK-CRESTED T.** (*L. atrocristatus*) has a similar head-tuft. The 'bottle-tits' or 'bush-tits,' building nests like the Penduline T., are represented by small species in the s.w. United States and in Mexico, of the genus *Psaltriparus*. The **GOLD T.** or **YELLOW-HEADED T.** (*Auriparus flaviceps*) is of the same region,

TITAN—TITANIUM.

TITAN, n. *tī'tān*: in *heathen myth.*, one of the 12 sons and daughters of Heaven and Earth; the famous war of the Titans was between Jupiter, aided by his brothers and sisters, and Kronos (Cronus)—who has usually been identified with Saturn (but see SATURN)—their father, the result being the deposition of Kronos, and the establishment of Jupiter on the throne of heaven. **TITAN**, a., or **TITANIC**, a. *tī-tān'ik*, of or relating to the Titans; superhuman; enormous.—The *Titans* or *Titanidæ* (originally called *Ouraniōnes*, Celestials), in Greek mythology, were the sons and daughters of Uranus (Heaven) and Gæa (Earth). Their names, as commonly given, were: Oceanus, Cœus, Crius, Hyperion, Iapetus, Krōnos. Theia, Rhea, Themis, Mnemosyne, Phœbe, and Tethys; Dione, Phorcys, and Demeter are added by some writers. Instigated by their mother, the Titans, headed by Kronos, rose against their father, emasculated and deposed him, and liberated their brothers the Hecatoncheires (Hundred-handed) and the Cyclops (q.v.), from Tartarus. Kronos, being made king, threw the Cyclops back again to Tartarus, and married his sister Rhea. In order to escape being deposed by one of his own children, as it was foretold he would be, Kronos swallowed each as it was born. Rhea, when she gave birth to Zeus (q.v.), saved his life by giving a stone wrapped in a cloth to Kronos, who swallowed it, believing it to be his child. Zeus, when he grew up, gave his father a potion which caused him to vomit the stone and the children that he had swallowed. Assisted by his brothers and sisters, with the Cyclops and Hecatoncheires, Zeus began the ten years' conflict with the Titans, which resulted in the complete overthrow of the Titans, who were hurled down into a dungeon below Tartarus, surrounded by a brazen wall, and guarded by the Hecatoncheires.—The name T. is given also to the descendants of the Titans, e.g., Prometheus, Hecate, Helios, Selene, etc.

TITANIA, n. *tī-tā'nī-a* [L.]: a name of Latona, as daughter of the Titan Cœus; of Pyrrha, as a descendant of the Titan Prometheus; of Diana, as the sister, and of Circe, as the daughter, of Sol: in *Midsummer Night's Dream*, name of the wife of Oberon.

TITANIUM, n. *tī-tā'nī-ŭm* [Gr. *titānos*, lime, white earth]: one of the metals, allied to tin, of dark copper-red color with strong metallic lustre, found sometimes in small cubical crystals in the slag of blast-furnaces. **TITANITE**, n. *tī'tān-īt*, prismatic titanium ore—better known by the name of *sphene*. **TITANIC**, a. *tī-tān'ik*, pert. to or containing titanium. **TITANIC ACID**, the oxide of titanium; the form in which titanium occurs as a constituent of several minerals. **TITANIFEROUS**, a. *tī'tān-īf'ēr-ŭs* [L. *fero*, I bear]: containing or yielding titanic acid and titanium.—*Titanium* (sym. Ti, at. wt. 48, sp. gr. undetermined) is a comparatively rare metal, which, according to the method by which it is procured, occurs as a gray, heavy, iron-like powder, which burns with brilliant scintillations in the air, and is converted into titanic oxide; or occurs in prismatic crystals. At 212° F. it decomposes water, and it is soluble

TITANOSAURUS—TITHE.

in hydrochloric acid. It is obtained in crystalline form by heating sodium in the vapor of bichloride of titanium. It never occurs native, but is found in association with other elements in various minerals, of which the most important are *Anastase*, *Rutile*, and *Brookite*, which are different forms of titanic oxide; and in the several varieties of titaniferous iron, consisting of ferrous titanate. A remarkable artificial compound of the metal is often found in the form of copper-colored cubic crystals adhering to the slags of iron-furnaces. They are hard enough to scratch agate, and are in the highest degree infusible; and no acid except a mixture of nitric and hydrofluoric acids has any action on them; but they are volatile at an extremely high temperature. They are a compound of titanium cyanide with titanium nitride. The most important compound of this metal is *Titanic Oxide* (TiO_2), which occurs in the minerals rutile, brookite, and anastase, each of which has a distinct crystalline form and a different specific gravity. Titanic oxide is obtained usually by a somewhat complicated process from rutile.

TITANOSAURUS, *tī-tan-ō-saw'rūs*, or **ATLANTOSAURUS**, *āt-lān-tō-saw'rūs*: genus of mammoth lizards, belonging to the order *Dinosauria*. The remains of T. are found in the Jurassic formations of N. America. The term T. is synonymous with *Atlantosaurus*, one species of which, *A. montanus*, from Colorado, is, says Prof. Marsh, 'by far the largest land-animal yet discovered, . . . 50 or 60 ft. in length, and, when erect, at least 30 ft. in height. It doubtless lived upon the foliage of the mountain forests.'

TIT-BIT, or **TID-BIT**: see under **TID** 1.

TITE, *tīt*, Sir **WILLIAM**, C.B., F.R.S., F.S.A.: English architect: 1802–1873, Apr. 20; b. London. His first independent work was the Scotch Chh. in Regent's Square, London (1825). His most memorable work was the Royal Exchange. He was M.P. for Bath 1855 till his death. T. was a great book-collector; after his death his extremely valuable collection was sold for very high prices.

TITHE, n. *tīth* [AS. *teotha*, tenth; *teothian*, to tithe or take a tenth: Fris. *tienda*, tenth: Icel. *tiund*, tithe]: a tenth part; the tenth part of the produce of land and stock, in some countries allotted to the clergy, now in England commuted into a rent-charge on the land, payable in money (see **TITHES**): V. to tax to the amount of a tenth; to pay tithes. **TITHING**, imp. *tī'thīng*: N. the act of one who tithes; the taking of tithes; in *Eng. in AS. times*, a district, the tenth part of a hundred, originally containing *ten* householders, each of whom was responsible to the king for the good behavior of the others (see **HUNDRED**). **TITHED**, pp. *tīthd*: **ADJ.** in *OE.*, paid as tithe. **TITHING-MAN**, the officer of a town; a parish officer; a constable. **TI'THABLE**, a. *-thā-bl*, subject to the payment of tithes. **TI'THER**, n. *-thér*, one who tithes or collects tithes. **TITHE-COMMISSIONER**, one of a board of officers in England to whom all matters pertaining to tithes are referred for settlement. **TITHE-FREE**, exempt from the payment of tithes.

TITHES.

TITHES: tenth part of the produce of the land, set aside by ancient usage, and subsequently by law, for support of the ministers and observances of religion. This provision for the priesthood passed at a very early period from the Jewish into the Christian Church; indeed, the same or a similar appropriation is traceable in the other ancient religions. It is observable under the patriarchal system, in the words of Jacob (Gen. xxviii. 22), and in the offering of Abraham to Melchizedek (Gen. xiv. 20); and mystical reasons have been devised for the selection of the tenth part, rather than any other fractional portion of the produce of the earth, to be consecrated to the uses of religion and the ministers of religion (see Spencer, *De Legibus Hebræorum*, iii. 1-10). The details of the institution among the Jews are given in Lev. xxvii., Deut. xiv., and many other places in the Old Test. The tribe of Levi not having lands assigned, as was the case with the other tribes, drew their support from this impost.

In the Christian dispensation, the existence of a class of persons devoted to the work of guiding and superintending the church necessarily supposed some provision for their maintenance; and this necessity is distinctly expressed in the New Test. (see Matt. x. 10; Luke x. 7; Rom. xv. 27; I Cor. ix. 7-14). The obligation thus involved has been set forth in ecclesiastical legislation from the earliest period. The apostolical canons, the apostolic constitutions, St. Cyprian on *The Unity of the Church*, and the works of St. Ambrose, St. Chrysostom, St. Augustine, and the other Fathers of both divisions of the church, abound with allusions to it. This obligation, however, was discharged mainly in the form of voluntary offerings; and the legislation of the first Christian emperors, while recognizing the duty of maintaining the clergy (as they had then come to be termed), and assigning lands and other property for their support, made no general enactment of tithes. The Council of Tours, 567; the second Council of Macon, 585; that of Rouen, 650; of Nantes, 660; of Metz, 756; and some others, distinctly sanctioned T.; and at length Charlemagne by his capitularies formally established the practice within those portions of the ancient Roman empire to which his legislation extended.

From this and other sources, the payment of a tenth to the church extended throughout western Christendom. By some the claim was held to be of divine law; by others, of human institution; but, in the gradual progress of relaxation, the right established solely for the church began to be usurped by nobles or other powerful laymen for themselves and for purely secular uses: see IMPROPRIATION.

The introduction of tithes into England is ascribed to Offa, King of Mercia, in the close of the 8th c. The usage passed into the other divisions of Saxon England, and was in the end made general for all England by Ethelwulf. By a deeretal of Innocent III., addressed to the abp. of Canterbury 1200, all were required to pay T. to the clergy of their respective parishes, and this parochial distribution of T. has ever since obtained in England. The ancient

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canon and civil law distinguishes many varieties of T., e.g., royal, indominicate, fiscal, salic, etc. In England, in later times, T. were of three kinds—*predial*, *mixed*, and *personal*: *predial*, arising immediately from the earth itself, e.g., grain of every kind, fruits, and herbs: *mixed*, proceeding from things nourished by the earth, e.g., calves, lambs, pigs, colts, chickens, milk, cheese, eggs, etc.: *personal*, arising from profits of personal industry in a trade, profession, or occupation; though it is commonly held that personal T. were paid ordinarily as a voluntary offering at Easter or some other period. T. were not held due from the products of mines or quarries, nor from houses, nor from wild animals, nor from tame animals kept for pleasure and not for profit. There was also an arbitrary distinction into *great* and *small* T., the *great* being T. of corn, hay, wood, etc.; the *small* being the other kinds of predial T., as well as all personal and mixed T. This distinction was important, inasmuch as the great T. of a parish belong to the Rector (q. v.), and the small T. to the Vicar (q. v.). T. were originally paid 'in kind'—i.e., by actual numeration of the products of the land, and apportionment in each of the numerical tenth part, as of the tenth sheaf, the tenth lamb, calf, etc. The inconvenience and trouble of this mode early led to attempts to provide modes of commuting the payment, which took various forms—voluntary and unsystematic, yet recognized by law. Gradually the modes of exaction became recognized as liable in many cases to be oppressive, also as giving rise to disputes; and in some cases the collection could not be enforced.

A measure for commutation became absolutely necessary, and passed into law 1838. Various statutes for England or Ireland have since been enacted: their object for England is to substitute for all the other forms of payment a money rent charge, varying on a scale regulated by the average price of corn for seven years. This commutation may be either voluntary, or effected by the tithe commissioners, according to a valuation. Similar arrangements have been made in the few Rom. Cath. countries in which T. continue to be paid.—See CHURCH RATES: PARISH.

In Ireland, the settlement was effected by a general commutation of tithe into a money rent-charge, regulated by a valuation of the tithes (one-fourth being deducted for cost of collection), and payable by the proprietors, who should receive it from the occupiers of the land. Afterward this rent-charge became vested in the commissioners of church temporalities, with power to sell such rent-charge to the owner of the land charged therewith at 22½ years' purchase.

TITHONIC, a. *tī-thōn'ik* [Gr. *Tithōnos*; L. *Tithōnus*, in anc. myth., a son of Laomedon, consort of Aurora, endowed with immortality]: pertaining to or denoting those rays of light which produce chemical effects; actinic. **TITHON'ICALLY**, ad. *-lī*. **TITHONICITY**, n. *tī'thōn-īs'ī-tī*, that property of light by which it produces chemical effects; actinism.

TITHONUS, *tī-thō'nūs*, in Greek Mythology: son of Laomedon, brother of Priam, and spouse of Eos, the goddess of Morn. The story is that Eos, in asking from Zeus immortality for her spouse, forgot to ask at the same time eternal youth; so that in his old age he became completely shrunk and decrepit, whereby his 'cruel immortality' was rendered a burden to him, until, in answer to his prayer for deliverance, he was turned into a grasshopper.

TITIAN, *tīsh'an*, or **TIZIANO**, *tē-tsē-ā'no*, **VECELLIO**, *vā shēl'lē-o*, or **VECELLI**, *vā-chēl'lē*: head of the Venetian school, and one of the greatest painters that ever lived: 1477-1576, Aug. 27; b. at Capo del Cadore, in the Friulian Alps; of a good family. His predilection for drawing caused his father to send him to Venice at the age of ten, that he might learn to be a painter. His instructors were Sebastiano Zuccati and the two Bellinis, particularly Giovanni; but the painter that most influenced his style was Giorgione (q.v.), with whom for a time he had a sort of partnership. So vivid and keen was his appreciation of the distinctive features of any artist's work, that he never failed to reproduce them with striking fidelity, and even to leave the impression that he had surpassed the master whom he imitated. It has been said (though on insufficient evidence) that this irrepressible superiority broke the friendship between T. and Giorgione. The first work that brought T. prominently into notice was his completion of the *Homage of Frederick Barbarossa to Pope Alexander III.* (1512), begun by Giovanni Bellini, and left unfinished at his death. The Venetian senate, who had ordered the piece, were so much pleased with T.'s performance that they conferred on him an office with an annual salary of 300 crowns. In 1514 he painted a *Bacchus and Ariadne*, and similar works for the Duke of Ferrara, a portrait of the duke himself, besides a picture of the *Tribute-money*. While at the court of Ferrara, he made the acquaintance of the poet Ariosto, who sat to him for his portrait. On his return to Venice, he painted an *Assumption of the Virgin*, one of his grandest achievements, now in the Venetian Academy. His reputation now rose to the highest point—giving him a position higher, perhaps, than that of any other painter on record, except Raphael, Michelangelo, and (later) Rubens. Pope Leo X. and Raphael both invited him to Rome, and Francis I. to France; but he declined. The most celebrated of his many productions 1520-30 were: *St. Peter, Martyr*, a work of unsurpassable beauty; *Victory of the Venetians over the Janizaries*; and *St. Sebastian*. In 1530 his friend Pietro Aretino (q.v.), the poet, introduced him to Emperor Charles V., whose portrait he painted at Bologna, and who gave him several other commissions. From Bologna T. went to Mantua, where he executed a great number of works for Duke Frederico Gonzaga. He did not visit Spain, though several of his masterpieces are now in that country. In 1537 he executed an *Annunciation*; 1541, *Descent of the Holy Ghost upon the Apostles*, *Sacrifice of Abraham*, *David and Goliath*, and *Death of Abel*; and 1543, pictures of the

TITICACA—TITLE.

Virgin and *San Tiziano*, and portraits of Pope Paul III., Cardinal Farnese, and Duke Octavio Farnese, at Rome, where he remained three years. Emperor Charles V. twice called him to Augsburg (1547 and 50). Among his religious works for Philip II. of Spain are a *Last Supper*, *Christ in the Garden*, *St. Margaret with the Dragon*, and *Martyrdom of San Lorenzo*; besides *Venus and Adonis*, *Danaë*, *Medea and Jason*, and other classic subjects. A complete catalogue of T.'s works does not exist, but the number known is extraordinarily great—more than 600. T. died of the plague, in Venice, where, out of a pop. of 190,000, 50,000 died at that time; he had attained the age of 99.—He is best studied at Venice or Madrid, but splendid specimens of his work are in the chief European galleries. As above observed, he had at first a tendency to reproduce the style of acknowledged masters; but his surpassing genius soon emancipated itself from all imitativeness, and displayed a glorious originality and power. He was not, like Michelangelo a universal genius; he had not supreme creative invention, nor sublimity of intellect: his greatness was in painting. As a manipulator of color, and in his whole technical art, for general force and harmony of effect, he has never been matched. The luxury of light did never so enrich a painter's canvas: this is, indeed, his transcendent excellence. His minor merits of design, fertility in invention, felicity in composition, are thrown into the shade by the splendor, boldness, and truth of his coloring, which alone has sufficed to give him a place with the greatest names in art, Raphael, Leonardo da Vinci, and Michelangelo.—See Hume's *Notices of the Life and Works of Titian* (Lond. 1829); Northcote's *Life of Titian* (Lond. 1830); and *T.: his Life and Times*, by Crowe and Cavalcaselle (Lond. 1876).

TITICA'CA, LAKE: see PERU.

TITIENS. TERESA: see TIETJENS.

TITILLATE, v. *tīt'īl-lāt* [L. *titillātus*, pp. of *titillārē*, to tickle: F. *titiller*]: to tickle. TIT'ILLATING, imp.: ADJ. tickling. TIT'ILLATED, pp. TIT'ILLA'TION, n. *-lā'shūn* [F.—L.]: the act of tickling or state of being tickled; any slight pleasure.

TITIVATE, v. *tīt'ī-vāt*: in *slang*, to make neat or smart; to tidy; also TITTIVATE.

TIT'LARK AND TIT'LING: see PIPIT.

TITLE, n. *tī tl* [OF. *title*—from L. *titulus*, a superscription, a title: It. *titolo*; F. *titre*, a title]: an inscription put over a thing as the name by which it is to be known; the inscription at the beginning of a book intimating the subject of the work and usually the author's and publisher's names; a general head containing particulars; a name; an appellation; a name of honor or dignity; a claim of right; that which is the foundation of ownership, as to an estate or house; the written document that proves a right; in *Chh. of Eng.*, the presentation to a curacy which enables a candidate to request ordination: V. to call; to name. TIT'LING, imp. *-tlīng*. TITLED, pp. *tītld*: ADJ. having a title or

TITLE—TITLES OF HONOR.

name of honor. **TITLE-DEEDS**, written instruments setting forth a man's title or right to property; written evidences of ownership of real property. Each owner is supposed to be in possession of his own T.-deeds, and their ownership passes along with that of the lands themselves. It is dangerous to part with T.-deeds, for by merely pledging them as security for money an equitable lien on the lands may be created. **TITLE-PAGE**, the first page of a book containing the title. **TITLE-RÔLE**, the character or part in a play which gives name to the play.

TITLE, REGISTRATION OF: entry in public records of all transfers of real estate. In all the states of the Union, such registration is required by law as a perpetual record of transactions affecting title to real estate. Hence, in the United States, the registers of the county clerk's (or like functionary's) office must possess the evidences of all transfers of real-estate title by way of purchase, gift, etc., though not of passage of title by descent: see **RECORD OF CONVEYANCES**.—In England, where no general system of registration exists, the complexities of transfer of title are very great; and, in that country, conveyancers, afraid to commit an error by omitting or abridging any of the ancient forms, repeat them with additions (for greater safety). Hence from time to time the legislature interferes to sweep away excrescences and to provide brief and simple forms. But though much has been done in this way to make transfer of title easy and sure, conveyancing in England is still encompassed with needless difficulty. An important step in reform—intended to be followed by others in time—was the passing of the Land Transfer Act, 1875, which *allows* registration of title whether possessory or absolute.

TITLES OF HONOR: designations to which certain persons are legally entitled by possession of particular dignities or offices. King and Emperor are T. belonging to the sovereigns of various countries; and Your Majesty is the form of address to which, by the usage of most European countries, they are entitled. Your Grace was in England, in former times, the usual address for the sovereign. The epithet Majesty (from the *majestas* of the emperors of Rome) was adopted by the emperors of Germany, who considered themselves successors of the Roman emperors; but its use by other European sovereigns is comparatively recent: Henry VIII. was the first king of England, and Henry II. the first king of France, who adopted it. Your Highness is the style adopted by the sultan of Turkey. The proper style (in full) of the reigning sovereign of the United Kingdom is, 'Victoria, by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith, Empress of India.' The sons of the sovereigns of England are styled Princes, and their daughters Princesses; and the sovereign's eldest son is Prince of Wales (q.v.). The title Royal Highness is given to all the children of the sovereign; and by letters patent under the great seal 1864, Feb., her majesty declared her pleasure that the children of the sons of the sovereign should also receive the same title. The different grades of the peerage

TITMOUSE—TITUS.

have their several titles--Duke, Marquis, Earl, Viscount, and Baron--each of which was in its origin a name of office involving certain specific duties. For practical directions, see FORMS OF ADDRESS.

Though most European countries have their dukes, marquises, counts, viscounts, and barons, these often differ considerably in rank from the seemingly corresponding titles in Britain, and the English rules and practices regarding title are not applicable in other lands. The complicated system of titles by law, and still more by courtesy (see COURTESY TITLES), in England, is a source of perplexity to foreigners.

TIT'MOUSE: see TIT: CHICKADEE.

TITTER, n. *tīt'tēr* [imitative of a succession of sharp thin sounds: Dut. *tateren*, to make a rattling sound, to stutter: Ice!. *titra*; Ger. *zittern*, to tremble, to shiver]: a restrained or nervous laugh; a giggle: V. to laugh in a restrained or nervous manner. TIT'TERING, imp.: N. restrained laughter. TIT'TERED, pp. *-tērd*.

TITTLEBAT, n. *tīt'tl-băt*: the Stickle-back (q.v.).

TITTLE, TITTLE-TATTLE, etc.: see under TIT.

TITULAR, a. *tīt'ū-lēr* [F. *titulaire*, titular—from L. *tit'ulus*, a title]: existing in name or title only; having the title without possession or enjoyment; nominal: N. a person invested with a title to an office, but who does not discharge its duties. Thus, the English kings styled themselves kings of France from the time of Henry IV. till 1800; and previous to the recent changes in Italy, the king of Sardinia, as well as the king of Naples, was titular king of Jerusalem. In English ecclesiastical law, a titular is a person invested with a title, in virtue of which he holds a benefice, whether he performs its duties or not.—In the law of Scotland, the term has a different acceptation: see TEINDS.—In the Rom. Cath. Church there are many titular dignities; but the class most noticeable has grown out of the separation between the Eastern and Western churches. The Roman pontiff claims authority over the entire extent of Christendom; and even where there is not any longer resident within the limits of an ancient church or province a body of Christians of the Roman communion, the pope claims to appoint an ecclesiastic to be bishop, metropolitan, primate, or patriarch of the ancient see (see IN PARTIBUS INFIDELIUM). In Britain, where archbishops and bishops of the Rom. Cath. Church exist *de facto*, but not *de jure*, they are styled titular. TIT'ULARLY, ad. *-lī*. TIT'ULAR'ITY, n. *-lār'ī-tī*, state of being titular. TIT'ULARY, a. *-lēr-ī*, pert. to a title: N. one who has a title or right.

TIT'US (TITUS FLAVIUS SABINUS VESPASIANUS, *tī'tūs flāv'ī-ūs sa-bī'nūs vēs-pā-sī-ā'nūs*), Emperor of Rome, 11th of the 12 Cæsars: 40, Dec. 30—81, Sep. 13 (reigned 79–81); b. Rome; eldest son of Vespasianus (q.v.) and Flavia Domitilla. Brought up at the court of Nero with Britannicus, son of Emperor Claudius, he received an excellent training both of body and mind; became adept in manly

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exercises, and an accomplished scholar; and subsequently, as *tribunus militum* in Germany and Britain, and commander of a legion in Judæa under his father, proved his qualities as a soldier and a general. On his father's elevation to the imperial throne, T. was left to prosecute the Jewish war, which he brought to a close by the capture of Jerusalem after a long siege. The news of the success was received with the utmost joy, and Vespasian's too suspicious temper was awakened. However, T., by returning to Rome and laying the trophies of victory at the emperor's feet, removed his unfounded jealousy, and father and son obtained the honor of a joint triumph A.D. 71. About this time T. became his father's colleague in the empire, and the impression which the conduct of the young conqueror made upon the Roman people was very unfavorable. He gave himself up to all forms of pleasure, put to death various suspected persons very summarily, and even caused one of his guests, whom he justly suspected of conspiracy, to be assassinated as he left the palace. His *liaison* with the shameless beauty Berenice, daughter of Herod Agrippa I. (q.v.), was very distasteful to the Romans; and on the death of his father (79), whom a few then believed T. to have poisoned, the Romans considered that they had evidence of the advent of a second Nero. But T.'s behavior after his hand grasped an undivided sceptre strangely belied their anticipations. The first act of his reign was to stop all prosecutions for *læsa majestas*, which had abounded since the time of Tiberius (q.v.); informers were scourged in the forum, dragged along in front of the theatres, and then either sold as slaves or banished. The ancient and venerated buildings of Rome were repaired; new ones, as the Colosseum (see AMPHITHEATRE) and the baths which bear T.'s name, were erected; and the prominent tastes of the populace were abundantly gratified by games on the most stupendous scale and continuing 100 days. T.'s beneficence was unbounded, and by reason of great disasters during his brief reign there was urgent need of it. In 79 was the great eruption of Vesuvius, which overwhelmed Herculaneum and Pompeii, and ruined many other towns and villages; in 80 a fire broke out in Rome, which raged three days, destroying the Capitol, Augustus's library, Pompey's theatre, and numerous houses; and in the tracks of these calamities followed a dreadful pestilence. T. dealt out gifts with lavish hand to the houseless and ruined sufferers; he even despoiled his palaces of their valuable ornaments to obtain money for distribution, and schemed and planned to furnish occupation for them. He became the idol of his subjects, the 'love and delight of the human race;' but, in the beginning of the third year of his reign, a sudden illness caused his death at his patrimonial villa in the Sabine country, not without the suspicion of poison by Domitian, his younger brother.

TITUS—TITUSVILLE.

TITUS, *tī'tūs*: companion and assistant of the apostle Paul, to whom the latter addressed one of his epistles. He accompanied Paul on his missionary tour in Asia Minor and Macedonia; twice he was Paul's envoy to the church of Corinth. He was for a time in charge of the churches in Crete. Later, T. was sent into Dalmatia, and thereafter is not mentioned in the New Testament.

TITUS, EPISTLE TO: one of the three 'Pastoral Epistles' in the New Test., written by the apostle Paul, probably in the latter part of his life, and after he had been liberated from his first imprisonment at Rome; though the question as to the time to which the writing of this letter can be assigned has not been satisfactorily answered. The apostle was staying at Nicopolis when he wrote the letter (see iii. 12); and the subscription identifies this place with Nicopolis of Macedonia; but this is impossible, for, as De Wette notices, that city appears to have been founded by Emperor Trajan long after the apostle's death. Jerome's opinion is probably correct, that the Nicopolis referred to was the famous city in Epirus.—The epistle concerns itself mainly with the organization and discipline of the church in Crete; is very practical, and at times sharp in its tone, as if Paul had felt more acutely than usual the vexations which 'unruly and vain talkers and deceivers, *specially they of the circumcision,*' caused him. Above all things, however, he is solicitous that the Christians of Crete should shun the immoral practices of heathenism.—From the days of Eichhorn, the Pauline authorship of this and the other Pastoral epistles (see **TIMOTHY, EPISTLES TO**) has been disputed by some scholars on the ground of their differing from Paul's epistles not merely in style but in doctrine: the weight of critical judgment, however, remains in their favor.

TITUSVILLE, *tī'tūs-vīl*: city in Crawford co., Penn.; on Oil creek, and on the Western New York and Pennsylvania and the Dunkirk Allegheny Valley and Pittsburgh railroads; 28 m. e. of Meadville, 90 m. s. of Dunkirk. It is tastefully laid out on a plateau sloping to the s.; has thorough drainage, excellent water by the Holly system, gas and electric light plants, handsome municipal building, several hotels, fine opera-house, and high and graded public schools; and contains Bapt., German Ref., Meth. Episc., Meth. Episc. Zion, Presb., Prot. Episc., Rom. Cath., and Univ. churches; 1 national bank (cap. \$300,000), 1 state bank (cap. \$150,000), 1 private bank; and 2 daily, 3 weekly, and 1 semi-weekly periodicals.—Col. Drake first 'struck' petroleum oil here 1859, Aug., the first refinery was built 1861, and the place was incorporated 1867. The industries comprise manufacture of every article and tool employed in production and refining of oil; and here one may see the whole process of the petroleum industry from the pumping at the wells to the shipment of the refined oil.—Pop. (1880) 9,046; (1890) 8,073; (1900) 8,244.

TIUMEN—TIVOLI.

TIUMEN, or **TYUMEN**, *tê-ô-mě'n'*: town of w. Siberia, govt. of Tobolsk; on the Toura, affluent of the Ob (q.v.). Its advantageous situation on the highways, by land and water, between Russia and Siberia, has made it an important commercial centre and the seat of flourishing manufactures. The vessels which navigate the Ob, the Irtysh, the Tobol, and the Toura, mostly receive their cargoes here. Large quantities of leather, leather goods, carpets, soap, candles, and common pottery are manufactured and exported throughout w. Siberia, the Ural countries, the Kirghis Steppes, Khokan, Bokhara, and China.—Pop. 15,212.

TIVERTON, *tiv'ér-ton*: municipal borough in n.e. of Devonshire, England; 14 m. n. of Exeter, 184 m. w.s.w. of London. There are important weekly markets, and four great annual markets for cattle. There is a large lace factory, employing more than 1,000 hands. The town is on a hill between the rivers Exe and Lowman; hence the old names of the town, **TWYFORD** and **TWOFORDTOWN**. The streets in many places are very narrow, but clean. Rapid streams of water flow down the channels along the sides of the streets—a gift to the town about 1262, by Amicia, Countess of Devon. The castle was built 1106. The free grammar school, an old building in the Elizabethan style, was endowed by Peter Blundell 1604: in connection with the school are scholarships and exhibitions at Oxford and Cambridge.—Pop. (1881) 10,462; (1891) 10,892.

TIVOLI, *tě'vô-lê* (anc. *Tibur*): town of central Italy, province of Rome; 17 m. e.n.e. of Rome; 830 ft. above sea-level, on the slope of Monte Ripoli, one of the Apennines. T. is walled and has a fortress. The streets are steep, narrow, and beset by beggars. There is a fine cathedral, formerly a temple of Hercules, where Augustus held his tribunal. The surrounding hills are covered with olive-trees. The vines of T. are famed for a peculiar sort of grape, in great request for its firmness and luscious flavor, noticed as early as the time of Pliny the Elder. The stone called 'travertino,' of which great part of Rome is built, is brought from Tivoli. Near T. is the extensive Villa d'Este. Within and without the city there are many monuments of antiquity. In a commanding position above the falls of the Anio stands in good preservation the circular Temple of Vesta, built B.C. 70. There are also the extensive remains of Emperor Hadrian's magnificent villa; the villa of Mæcenâs; remains of mausoleums, aqueducts, baths, etc. The place is visited by tourists for its water-falls, lofty but not very picturesque.

Tibur long existed as a town (according to ancient tradition) before the building of Rome; but appears in history first in B.C. 446, during the Roman decemvirate. It was one of the principal towns of the Latin confederation. Its healthful and picturesque situation induced many wealthy Romans to choose it for their country residences. Mæcenâs, Scipio, Æmilianus, the famous Marius, Metellus Numidicus, and Munatius Plancus had their Tiburtine villas. Horace preferred Tibur to all other places of resort (al-

though he alludes to its moist atmosphere, calling it 'Udum Tibur'), and had a country house in the neighborhood. It is one of the few towns of Latium which still stand on their ancient sites.—Pop. (1881) 9,730.

TIVY, ad. *tiv'ŷ*: contr. of TANTIVY (q.v.).

TIZA, n. *tī'zā*: the name given to borate of lime in southern Peru, where it is found on the dry plains in white reniform nodules.

TLEMCEN, *tlēm-sēn'*, or TILIMSÁN, *tī-līm-sán'*: town of Algeria, cap. of the province of Oran, 86 m. s.w. of the city of Oran, 2,625 ft. above sea-level, in an undulating country, everywhere irrigated and completely under cultivation. It contains a fine Rom. Cath. church, five synagogues, a splendid mosque and many other mosques, also Prot. churches; and there are numerous educational institutions, including schools for Arabs and Jews. It is protected from the s. wind by a range of hills. The town is accessible only from the s.w., the other sides presenting steeply escarped fronts. The district around T. is covered with fruit-trees of all kinds, of which the olive is one of the most valuable; and there is much cultivated land, producing cereals, tobacco, etc. Besides the special markets, a daily market is held, at which cattle, wool, grain, and oils are largely sold. Ostrich feathers and corks are exported; but the trade is mostly in cloths, hides, grain, and oils.—Pop. (1886) 19,745; (1891) 29,544.

TMESIS, n. *tmē'sīs* [Gr. *tmēsis*, a severance—from *temnō*, I cut]: in *gram.*, the division of a compound word into two parts, and the insertion of one or more words between them; Diacope (q.v.).

TO, prep. and ad. *tō* or *tū* [Dut. *toe*; Ger. *zu*, to]: in the direction of; unto; toward, denoting motion toward a place, point, object, position, or state; as far as, denoting limit reached; upon; besides, denoting addition; for, denoting adaptation; in harmony with, denoting accord, as, true *to* life; against, denoting opposition, as, to bet 10 *to* 1; compared with; the sign or prefix of the infinitive of a verb; the particle coming between two verbs to show that the second is the object of the first; used after a verb to modify its meaning, as, he comes *to*, to fall *to*: in *colloquial usage*, the infinitive is often understood, and only *to* expressed, as 'he orders me to go, but I do not wish to' (*go* being understood). TO-DAY, n. ad. this day. TO-NIGHT, n. ad. this night. TO-MORROW, n. ad. the morrow. TO AND FRO, backward and forward. TO THE FACE, directly; in presence of; in defiance of. To WIT, to know; namely; 'that is to say.' *Note*.—'*To* was originally used not with the infinitive, but with the gerund in *-e*, and, like the L. *ad* with the gerund, denoted a purpose. Thus *to love* was originally *to lovene*, i.e., to (or toward) loving, L. *ad amandum*.'—Abbott's *Shakespearian Grammar*.

TOAD, n. *tōd* [Dan. *tudse*, a toad: Icel. *tutna*, to swell: prov. Eng. *tote*, to bulge out!]: reptile resembling the frog, but without its activity, named from the creature's habit of puffing itself up with air (see below). **TOAD'ISH**, a. *-ish*, in *OE.*, like a toad. **TOAD-EATER**, n. *originally*, the assistant to a mountebank, who ate or pretended to eat poisonous toads, in order to give his master an opportunity of showing his skill in extracting the poison; hence, a fawning obsequious parasite; a servile flatterer. **TOAD'Y**, n. *-y*, a sycophant; a mean flatterer or hanger-on; **TOAD'IES**, n. plu. *-iz*: V. to fawn upon with servile flattery; to display obsequiousness toward. **TOAD'YING**, imp. **TOAD'IED**, pp. *-id*. **TOAD'YING**, n. *-y-ing*, or **TOAD'YISM**, n. *-izm*, servile flattery; the practice of meanly fawning on another. **TOAD-STOOL**, name applied to various species of fungi; general name for *Agarics* and *Bolēti*.

TOAD: a batrachian mostly of the genus *Bufo*: see **BATRACHIA**. The form resembles that of the frogs, but is more thick and clumsy, and the hind-legs are generally short, so that the species rather crawl than leap; the hind-toes are webbed slightly or not at all. The skin is warty, and the warts or tubercles produce a milky exudation, which in some species is very fetid. Behind the ear is a porous pad—a very large parotid gland—from which copious exudation takes place. The mouth of the true toads is destitute of teeth. The food of toads consists chiefly of small insects and slugs, and they mostly inhabit shady places. In their adult state, they are much less aquatic than frogs, but their spawn is deposited in water, in which their tadpoles live for a brief time, while small. A notion has very generally prevailed that the exudation of the skin is venomous, but toads are handled with perfect impunity. They are eaten by some savage tribes.—Only two species are British. The **COMMON T.** (*B. vulgaris*) is abundant in most parts of Britain and in w. Europe, but is not found in Ireland. Its spawn resembles that of the frog, but the ova are smaller and more numerous. Toads are very useful in gardens, in preventing the excessive increase of some kinds of insects; and the market-gardeners of the neighborhood of London often purchase them at the price of fourpence each. They have occasionally been tamed. A tame **T.**, of which an account is given by Pennant in *British Zoology*, lived more than 40 years, and was at last killed by a raven.

Numerous instances are on record in which toads are said to have been found imbedded in rocks, walls, and even in the trunks of trees, where the necessary conclusion is that they must have lived a very long time in a dormant state. Unfortunately, however, the discovery of these toads has almost always been by unscientific persons; but it is possible that in a very young stage a toad may find its way through a small crevice, which also admits insect food or nutriment in some form: see an interesting account of Dr. Buckland's experiments in Buckland's *Curiosities of Natural History*.—The other Brit. species of **T.** is the **NATTERJACK** (*B. calamita*), called also the **Running T.**: it never hops, and its motion is more like walking or running

TOAD-FISH—TOADSTONE.

than the crawling of the common toad.—Several other species of T. are found in Europe. Some found in tropical countries attain very large size, and exhibit protuberances of various kinds, far exceeding the warty excrescences of the common toad.

The COMMON T. of N. America is *B. lentiginosus*, formerly assigned to several species before its varieties of color were understood. The SPADE-FOOTED T. (*Scaphiopus Holbrookii*) of e. N. Amer. is named from foot-appendages useful in digging; it is very noisy in spring. A similar species occurs in the Rocky Mt. region. The so-called Horned T. of the west is a lizard. The Obstetrical T. of Europe (*Alytes obstetricus*) is so named because the male winds the string of eggs around his legs until they are hatched. The Cell-backed T. of surinam (*Pipa Americana*) is remarkable for cells in the back of the female into which the male puts the eggs, where they remain until hatched. In several species in S. America the female receives the eggs into a pouch, as occurs in kangaroos, but of course without the nourishing apparatus of the latter; the genus is *Notrotema*.

TOAD'-FISH: see FROG-FISH.

TOAD'FLAX: herbaceous plant of the genus *Linaria*, nat. order *Scrophularineæ*, very closely allied to SNAP-DRAGON (q.v.), distinguished chiefly by the spur at the base of the corolla, and the capsule opening by valves or teeth, not by pores.—The species are natives chiefly of colder and temperate parts of the old world. Some are natives of Britain, of which the most common is *L. vulgaris*, a species with erect stem 1-3 ft. high, glaucous linear-lanceolate leaves which thickly cover the stem, and terminal spikes of yellow flowers. It grows in hedges, the borders of corn-fields, etc. It has purgative and diuretic properties, and a decoction of it is used as a fly-poison; but it is regarded as a troublesome weed by farmers. It has found its way, probably with grain or other grass seeds, into the United States. A remarkable monstrosity is sometimes seen in this plant, to which the name *Peloria* has been given, the flower presenting five spurs and five usually imperfect stamens.—*L. Cymbalaria*, a pretty little plant with trailing stems and 5-lobed cordate leaves, is often planted to cover old walls, etc., and is either a native of Britain or naturalized in many places.

TOADSTONE, n. *tōd'stōn* [Ger. *todtstein*, dead stone—that is, stone containing no ores]: among *Derbyshire miners*, certain trap-rocks which occur interstratified, or in connection with the mountain limestones, void of ore: [from Eng. *toad*]: a stony concretion or jewel, fabled to be found in the head of the toad; a kind of amygdaloid, so called from its mottled aspect resembling the skin of a toad.

TOAST—TOASTING.

TOAST, v. *tōst* [OF. *toster*; It. *tostare*, to toast or parch—from L. *tostus*, pp. of *torrēre*, to dry, to scorch]: to dry and scorch by the heat of a fire, as bread or cheese; to warm thoroughly: N. bread scorched or browned before the fire. **TOAST'ING**, imp. **TOAST'ED**, pp.: **ADJ.** scorched by heat, as bread or cheese. **TOAST'ER**, n. *-ér*, an instr. for toasting bread, cheese, etc., before the fire—also **TOASTING-FORK**. **TOAST-RACK**, a small light stand, generally of metal, having partitions, in which dry slices of toast may stand upright.

TOAST, v. *tōst* [probably from the Ger. cry *stoss an*—that is, *clink*—the Ger. toppers knocking their glasses together when they pledge each other]: to drink to the health or honor of; to drink in honor of anything, or to its prosperity; to name a health to be drunk: N. the person or thing named whose health and prosperity are to be drunk to; the call to drink to the health of another, or the sentiment uttered on such an occasion; a person frequently toasted; hence, the belle of the place or season (see **TOASTING**). **TOAST'ING**, imp.: N. the practice of drinking toasts. **TOAST'ED**, pp. **TOAST'ER**, n. *-ér*, one who toasts. **TOAST-MASTER**, a person at a public dinner who announces the toasts and leads the cheering.

TOASTING: practice of drinking to the health or honor of any one. This practice, probably ancient, received an artificial development by the convivial habits of the 17th c.: then it became the fashion to drink to the health not only of entertainers, but also to that of each guest, of absent friends, and especially of the unmarried woman whose attractions were most generally acknowledged. Whatever may have been the origin of the use of the word 'toast' as applied to the person thus honored, it is now applied to any person or to any sentiment mentioned with honor before drinking. The French have adopted the word, making it masculine when applied to a man or a sentiment, feminine when to a woman. See the *Rambler*, 24th No.; Chambers's *Book of Days*; Valpy's *History of Toasting* (1881).

TOBACCO.

TOBACCO, n. *to-bak'ko* [the American Indian name, *tabaco*, for the pipe or tube in which the natives smoke the plant, transferred by the Spaniards to the plant itself: Sp. *tabaco*: F. *tabac*]: highly narcotic and poisonous plant, indigenous in America, but extensively grown elsewhere; the dried and prepared leaves of the plant, much used in smoking and chewing, and in the manufacture of snuff.

TOBACCONIST, n. *-nist*, one who manufactures the leaves of the tobacco-plant, or who sells the various manufactured forms of it: in *OE.*, a tobacco-smoker.—*Tobacco* is a plant of the genus *Nicotiana*, nat. order *Solanaceæ*; having large broad leaves, a 5-parted calyx, a funnel-shaped, 5-lobed corolla, and five stamens; the flowers growing in panicles at the top of the stem; the fruit a 2-celled, 5-valved, many-seeded capsule. The species of *Nicotiana* are mostly herbaceous plants, rarely shrubby, with large broad leaves, and everywhere covered with clammy hairs. They are natives of warm countries, most of them American, though some are found in the E. Indies. They all have the narcotic property, on account of which a few are extensively cultivated. It resides in almost all parts of the plant, though the leaves are almost exclusively used. The most important species is the COMMON T., or VIRGINIAN T. (*N. tabacum*), native of warm parts of America, whose cultivation had extended, before the discovery of the new world far to the n. of the regions in which the plant appears to be indigenous. It is about 5 or 6 ft. high, erect, with lanceolate, sessile leaves, 6–18 inches long, and rose-colored flowers, the throat of the corolla inflated, the segments pointed. There are a large number of varieties, differing in size and form of leaves and in form and color of flowers, some of which are regarded by some botanists as distinct species. Nearly every T.-growing district of the United States has its special variety of Seed-leaf T. which has been grown from native seed. Havana Seed-leaf and the Gadsden, both produced from seed originally imported from Cuba; the Perique, grown in La.; and the White Burley, which originated in O., are also popular in certain sections. The GREEN T. (*N. rustica*), sometimes called ENGLISH T. because it was the first kind introduced into England for cultivation, grows 3 to 5 ft. high, with ovate, stalked leaves, and the segments of the corolla rounded, its tube cylindrical. It is a native of the East, but is quite hardy, and therefore cultivated in more northern regions. The PERSIAN T. (*N. Persica*) has the root-leaves oblong, those of the stem lanceolate and sessile; the corolla salver-shaped, with a long tube; its lobes rather unequal. It is a native of Persia, and furnishes the Shiraz T., esteemed in the East, and milder than the common T. Other species are used in different parts of America, and some are cultivated to a small extent, as *N. repanda*, in Cuba; *N. quadrivalvis*, by the Indians on the Missouri; *N. multivalvis*, by the Indians on the Columbia; and *N. nana*, by the Indians of the Rocky Mountains.

It is doubtful whether the use of T. as a narcotic was known in the East before the discovery of America. Meyen,

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in his *Geography of Plants*, expresses the opinion that the smoking of T. is of great antiquity among the Chinese, because on very old sculptures he has 'observed the very same tobacco-pipes which are now in use.' Meyen's authority, however, is greater as a botanist than as an archeologist, and cannot be received as decisive of the antiquity of the sculptures of which he speaks. It is probable, but not certain, that the smoking of T. has been long practiced in China. On the introduction of the use of T. from America, it rapidly extended throughout Europe, and soon became extremely prevalent among oriental nations. The smoking of T. was found by Columbus a practice in the W. Indies, where the natives made it into cylindrical rolls, wrapped in maize-leaf. It has been prevalent from unknown antiquity among the American Indians as far n. as Canada. With them it even has a religious character, and is connected with their worship and with all their important transactions. Thus, the Calumet (q.v.), or pipe of peace, is indispensable to ratification of a treaty; and smoking together has greater significance of friendship than eating together has among other nations: also it seems to have served in the place of incense in their worship.

The seeds of the T. plant were brought to Europe first by Gonzalo Hernandez de Oviedo, who introduced it into Spain, where it was cultivated as an ornamental plant till Nicolo Menardes extolled it as possessed of medicinal virtues. It was introduced into Italy 1560. The use of T. in the form of snuff soon followed its introduction for smoking. There is no reference to the use of T. in Shakespeare; yet it was well known in England in his time, though at first its use was confined to the wealthy, as the price was very high; and it was smoked in very small pipes—probably those known to antiquaries as *Elfin Pipes*—and the smoke was expelled; not from the mouth, but by the nostrils, in which way the narcotic power of the herb is much greater. The popes Urban VIII. and Innocent XI. fulminated against it the thunders of the church; the priests and sultans of Turkey declared smoking a crime, Sultan Amuret IV. decreeing its punishment by the most cruel death; the pipes of smokers were thrust through their noses in Turkey; and in Russia, in the earlier part of the 17th c., the noses of smokers were cut off. King James I. of England issued a *Counterblaste to Tobacco*, in which he described its use as 'a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black, stinking fume thereof nearest resembling the horrible Stygian smoke of the pit that is bottomless.' All opposition, however, was vain. The use of T. increased, and has increased to the present day, when it is more prevalent than at any former time—the luxury of rich and poor, of civilized nations and of savage tribes. Although it did not become prevalent in the East till the 17th c., the Turks and Persians are now the greatest smokers in the world; in India all classes and both sexes smoke; in China (as also in Japan) the practice is universal, and girls, from the age of eight or nine, wear, as an ap-

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pendage to their dress, a small silken pocket to hold tobacco and a pipe. The use of snuff has diminished. T. is used in the three modes of smoking, chewing, and snuffing. Plugging, the stuffing of the nostrils with quids of T., has been almost universally discontinued. Chewing—still much practiced by sailors, to whom smoking is prohibited at sea, on account of the danger of fire—has greatly diminished among the refined classes. The smoking of T. is everywhere more or less social, like the use of wine; and the snuff-box in a former generation was handed from one to another in token of good-fellowship.

T. derives its botanical name (*Nicotiana*) from Jean Nicot, who introduced it into France. In that country its use in the form of snuff began in the reign of Francis II. About the same time, a snuff manufactory was established at Seville, which produced the celebrated Spanish snuff. The T. plant was soon introduced into other countries of Europe. In 1657 the manufacture and sale of T. were farmed out in Venice, and began to yield considerable revenue. Much revenue has since been derived from the same source in many countries. T. is now extensively cultivated in many parts of Europe, as well as in America and Asia. Prohibitory laws alone prevent its cultivation in southern parts of Britain and Ireland, where the climate is quite suitable. The quality of the leaf, however, deteriorates in the more northern regions, as in Germany, when it is continuously raised from home-grown seed; and seed is therefore imported from warmer countries.

Cultivation.—T. requires a rich soil, high manuring, and careful cultivation. The quantity as well as the quality of the leaf is greatly modified by climate, soil, and manures; but there is such diversity of varieties that one suited to almost any section of the United States can be readily found.

Seed is sown in a hot-bed, or in a sheltered place in open land, from Feb. to Apr., according to latitude. If carefully tended, the plants will be ready to set from Apr. to June. The land for T. should be well plowed (some growers plow two or three times), thoroughly pulverized, heavily manured, and should also receive a liberal quantity of commercial fertilizers (see FERTILIZERS). Level cultivation is sometimes practiced, but the plants are often set on ridges. Rows are 2 to 4 ft. apart, and the plants 2 to 3 ft. apart in the rows—giving 5,000 to 8,000 plants per acre; but only the smaller varieties can be set closely enough to secure the latter number. During growth of the crop, the ground must be frequently stirred and all weeds destroyed. The Cut-worm (q.v.) often proves very destructive, and makes it necessary to put out many new plants. Constant watchfulness is required to protect the leaves from the green-worm. Plants must be examined at frequent intervals, and all the worms which can be found, and the unhatched eggs on the under side of the leaves, destroyed. To increase the size of the leaves, prevent seeding, and hasten maturity, the tops of the stalks of those plants not designed for seed-growing should be broken off: this is

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done as soon as the flower buds are formed. By this process all leaves less than 6 in. in length are to be removed. Some growers break the tops lower than this, and remove also some of the leaves nearest the ground. When the shoots, called 'suckers,' which start from the axils of the higher leaves, reach a length of 3 or 4 in., they should be broken off close to the stalk, and it is necessary to repeat this operation just before the crop is harvested. As soon as the plants are mature, which will be indicated by a yellow or mottled appearance of the leaves, or before this time if there is danger of frost, they should be cut close to the ground: for this purpose, a saw, hatchet, or large knife is used. This work should not be done at midday if the weather is hot, nor when the leaves are wet; and the plants must not lie too long in the sun or be exposed to the rain. When the leaves are sufficiently wilted so that they will not readily break, the plants are to be strung on laths forced through the lower ends of the stalks by means of a sharp needle, about 6 or 8 plants to each stick, and taken to the tobacco-barn, where they can be hung upon poles to dry. While the curing process is going on, great care must be given to regulate the light and ventilation. In some places the curing is done in open sheds; in others it is hastened by hanging the plants in close buildings in which fires are maintained. A recently patented process consists in taking the leaves from the stalks in the field, stringing them on wires, and drying them by artificial heat. The field is gone over several times, the leaves that ripen earliest being taken first, and the others gathered as they mature. This is said to be much less costly than the ordinary method of curing, to prevent much of waste and damage, and to insure a better quality of leaf and a more uniform coloring than could otherwise be obtained. When the ordinary method of curing is followed, the plants are allowed to hang in the barn till late in the autumn, or till winter. During mild, damp weather, they are taken down; the leaves are 'stripped' from the stalks and packed into bales, boxes, or hogsheads. The work of assorting into various grades, done formerly by the grower, is now done usually by the buyer or manufacturer.—There are not less than 50 varieties of T. grown in the United States. Some are specially adapted to certain sections. Others which succeed over a wide range of soil and climate are valuable for certain specific purposes, as smoking and manufacturing into various forms for chewing, while widely different kinds are required to meet the demands of the various foreign countries to which considerable quantities are exported.

T. is imported largely in the leaf, though considerable quantities are brought in in various states of manufacture. The chief manufactured sort is called Cavendish, made by stripping the blades of the leaves from the midribs, and, after sprinkling them with an infusion of tobacco made from the stalks and other waste parts, laying them in heaps to heat or ferment. This darkens their color; and, while still moist and flaccid, they are laid smoothly on one

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another, to form cakes about nine inches in length by three in breadth, which are pressed by powerful machinery until they are very compact. Another kind is called Negrohead, formed into sticks about an inch thick, and eight or nine inches in length, which are laid across each other equally, and are then pressed into cakes. When the sticks are pulled apart, the rounded depressions caused by pressing them into one another give them a slight resemblance to the wavy locks of a negro's hair, whence their name. Another kind is called Twist (or Pigtail); it is a continuous string of T. about the thickness of a quill, many yards in length, made by twisting and spinning the leaves when flaccid from being wetted and heated as above described: this string is then made into balls. This is the kind chiefly used for chewing. The leaf simply twisted into a rope, as in the kind called Varinas Roll and similar sorts, as well as that merely cut small for smoking, is all regarded as 'manufactured.'

Cigars and *Cheroots* also are forms of manufactured tobacco; but so much in favor are these with smokers that the exorbitant duty is very little check on their demand. The island of Cuba supplies not only the best but also the largest quantity, the Havana T. being exceedingly well cultivated and cared for, and adapted especially for cigar-making. The Philippine Islands export about 100,000 lbs. per annum of cigars. Cigars and cheroots are essentially the same; they differ only in form—cheroots being rolled straight instead of spirally. Cheroots are chiefly from Manila.

Snuff is another form of manufactured T.: it is made by grinding the leaf either with or without the leaf-stalks and midribs. The grinding is generally effected in wooden mortars, with pestles also of wood; and some kinds of snuff are prepared from kiln-dried T., and others from the soft leaves. The varieties are numerous, and fortunes have been made by manufacturers who have been fortunate enough to make a snuff which has become a favorite.

The United States annually produces more T. than all Europe combined. In 1902 the product was 821,823,963 lbs., grown on 1,030,734 acres, and valued at \$80,472,506. The average annual production of all Europe is about 500,000,000 lbs. (Neumann-Spallart). U. S. product 1890 was divided among the states as follows: Ky. 283,306,000 lbs.; Va. 64,034,000; Tenn. 45,641,000; O. 35,195,000; N. C. 25,755,000; Penn. 24,180,000; Ind. 16,153,000; Md. 14,017,000; Mo. 13,109,000; Wis. 12,846,000; Conn. 9,603,000; N. Y. 6,488,000; W. Va. 4,496,000; Mass. 3,893,000; Ill. 2,947,000; Ark. 1,156,000; all others 2,976,000. Imports were: leaf 28,720,674 lbs., val., \$17,605,192; cigars, cigarettes and cheroots, 1,250,217 lbs., \$4,026,828; all other manufactures \$78,434—total val. \$21,710,454. Exports were: leaf 244,343,740 lbs., val. \$21,149,869; stems and trimmings 11,303,286 lbs., \$329,687, cigars 3,482,000, \$97,703; cigarettes 265,001,000, \$830,817; all other manufactures \$2,947,525—total value \$25,355,601; excess of export val. \$3,645,147. Total val. domestic production of

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chewing and smoking T. and snuff was \$78,703,184; of cigars and cigarettes (8,477 establishments) \$114,724,412. The revenue collections from manufactured T. 1901-02 aggregated \$51,718,258.

TOBACCO is used as a sedative or narcotic over a larger area and among a greater number of people than any similar substance, opium being second, and the hemp-plant third. T.-leaves, when submitted to chemical analysis, yield Nicotine (q.v.), the most characteristic constituent of T., albumen, a gluten-like substance, gum, resin, malic and citric acids, and a large amount of inorganic constituents, 100 parts of the dry leaf yielding from about 19 to 27 per cent. of ash, in which potash, lime, and silica preponderate. In a physiological and medical view, the analysis of the smoke of T. is far more important than that of the leaf. From the researches of Dr. Benjamin W. Richardson, it appears that, though 'the widest differences prevail in respect to the products arising from differing cigars, differing kinds of tobacco, and differing pipes,' there are certain substances which are common to all varieties of tobacco-smoke. First, there is in all T.-smoke a certain amount of *watery vapor*, impregnated with various substances, from which it may be separated. Secondly, a small quantity of free *carbon* is always present; it is to the presence of this constituent that the blue color of the smoke is due. 'It is this carbon,' says Dr. Richardson, 'which in confirmed and inveterate smokers settles on the back part of the throat and on the lining membrane of the bronchial tubes, creating often a copious secretion, which it discolors, and which is coughed up of a dark coaly appearance.'—*For and Against Tobacco*, Lond. 1865, p. 5. Thirdly, there is a certain quantity of *ammonia* present. The ammonia gives to the smoke an alkaline reaction, bites the tongue, and makes the tongue and throat dry after much smoking. Fourthly, *carbonic acid* is always present, as may be shown by its action on lime-water. The amount differs extremely in the smoke from different kinds of T.; but, according to Dr. Richardson, it may be inferred that the sleepiness, headache, and lassitude which follow prolonged inhalation of T.-fumes are due largely to the carbonic acid. Fifthly, T.-smoke yields a *product having an oily appearance* and possessing poisonous properties. It is popularly known as *oil of tobacco*, and on further analysis it is found to contain three substances—a fluid alkaloid, *nicotine*; a *volatile substance* having an empyreumatic odor; and a dark resinous *extract* of bitter taste. The symptoms of tremor, palpitation, and paralysis which ensue after excessive smoking, especially in persons unaccustomed to the practice, seem to depend on the nicotine, which is known, by experiment, to be highly poisonous. The peculiar smell of stale tobacco-smoke, on the smoker's breath and clothing, is from the volatile empyreumatic substance; and the nauseous sharp taste when the unpracticed smoker takes a foul pipe into his mouth is due to the bitter extract. It is apparently this extract which creates

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vomiting in persons unaccustomed to tobacco, and of which the body after a time becomes tolerant. Hence it appears that the more common effects are due to the carbonic acid and the ammonia; while the rare and more severe are due to the nicotine, the empyreumatic substance, and the resin.

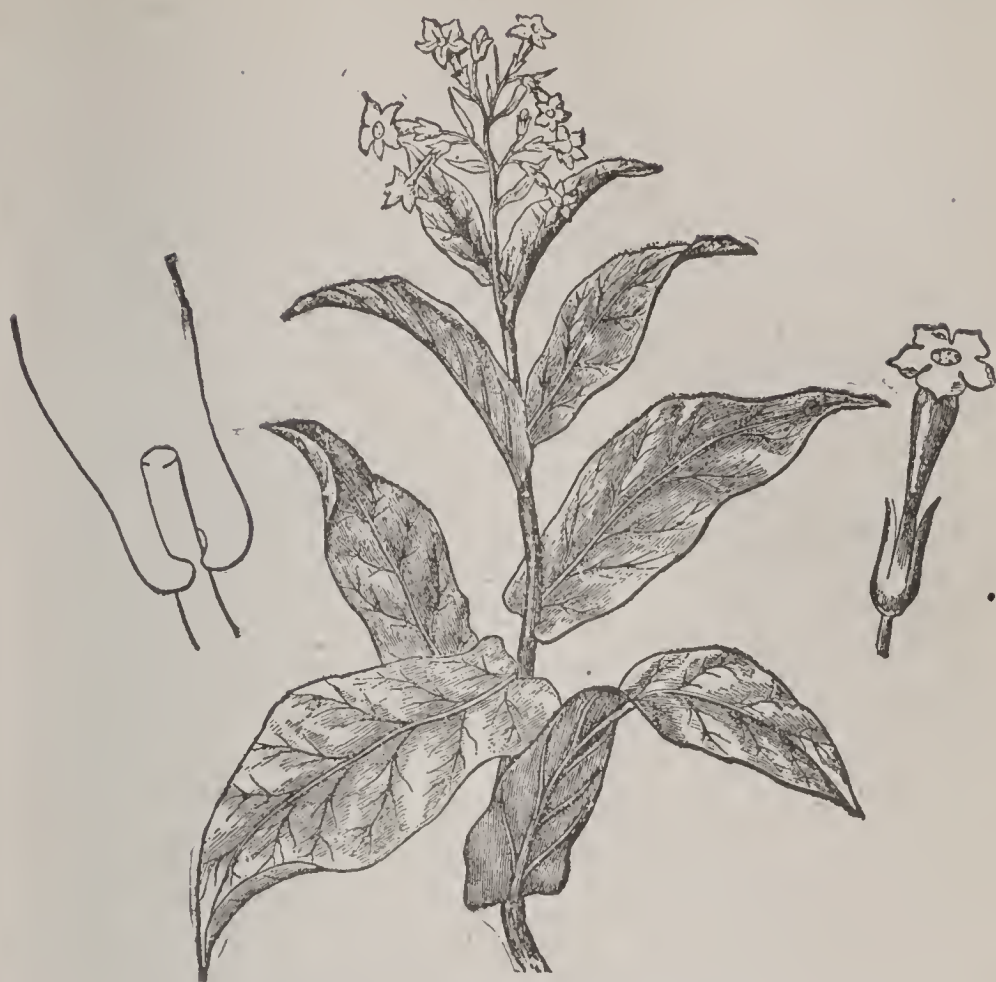
The poisonous effects which large doses of T. produce in persons unaccustomed to its use—in the form of powder, infusion, or excessive smoking—are faintness, nausea, vomiting, giddiness, delirium, loss of power of the limbs, general relaxation of the muscular system, trembling, complete prostration of strength, coldness of the surface, with cold, clammy perspiration, convulsive movements, paralysis, and death. In some cases there is purging, with violent pain in the abdomen; in others there is rather a sense of sinking or depression in the region of the heart. With these symptoms there is dilatation of the pupils, dimness of the sight, small, weak, and scarcely perceptible pulse, and difficulty of breathing. In all cases of poisoning with T., if it has been swallowed, an emetic of a scruple of sulphate of zinc should be at once administered, and the most powerful stimulants, external and internal, should be employed. Prof. Haughton has shown that nicotine and strychnine antagonize each other; on this assumption, strychnine, carefully administered, would be the proper antidote.

The cases are not very uncommon of slightly unpleasant results from the use of T.; but fortunately the effects produced by T. are very transitory, as the injurious elements find ready exit from the body. The system, after being subjected a few times to the influence of tobacco-smoke, becomes accustomed to it, the distressing symptoms no longer occur, and a condition of 'tolerance' is established. From the extensive investigations of Dr. Richardson, it appears that there are no grounds for believing that smoking can produce any organic changes. But it may produce various functional disturbances: (a) On the stomach. (b) On the heart, producing debility and irregular action. (c) On the organs of the senses, e.g., dilatation of the pupil, confusion of vision, subjective sounds, etc. (d) On the brain, suspending the waste of that organ, and oppressing it if it be duly nourished, but soothing it if it be exhausted. (e) On the nerves, leading to oversecretion of the glands which they control. (f) On the mucous membrane of the mouth, causing in excessive smokers what has been described as 'smoker's sore throat.' 'The disease consists of an irritable state of the mucous membrane at the back of the throat, redness there, dryness, a tendency to cough, and an enlarged, soft, sore condition of the tonsils, rendering every act of swallowing painful and difficult.' It may exist long without detection; but if a damp, cold, foggy state of the air comes on, the throat becomes troublesome and painful, enlargement of the tonsils is detected, and the symptoms are aggravated by an attempt to smoke. This condition is induced more readily by the use of cigars than of pipes; it is quite incurable so long as the patient continues to smoke, but soon disappears when

TOBACCO.

the use of T. is entirely suspended. In association with this condition of the throat, the gums are usually abnormally pale and firm. (g) On the bronchial surface of the lungs, sustaining any irritation that may be present, and increasing the cough. There is no evidence that T.-smoke can cause specific diseases, such as insanity, epilepsy, St. Vitus's dance, apoplexy, organic disease of the heart, cancer, consumption, or chronic bronchitis. If, as is universally allowed, T. possesses, as do alcohol, arsenic (in minute doses), opium, tea, coffee, etc., the power of arresting the oxidation of the living tissues, and thus checking their disintegration, it follows (1) that the habit of smoking must be 'most deleterious to the young, causing in them impairment of growth, premature manhood, and physical degradation' (Richardson, *For and Against Tobacco*, 73); and (2) that the habit may be conducive to the physical well-being of the individual, in the lack of sufficient nourishment from food to supply the daily wear and tear of the muscular and nervous systems.

For a long controversy on the question, *Is Smoking Injurious to Health?* in which distinguished medical men took part, see *The Lancet*, 1857, l. Some reformers violently antagonize smoking as the fruitful root of numberless moral and physical evils. The whole matter is fairly summed up by Dr. Richardson in the pamphlet freely used in this article. Before the full maturity of the system is attained, even the smallest amount of smoking is of ruinous effect; subsequently the habit is, in most instances, prejudicial only when carried to excess. The difficulty is to define moderation and excess. It should be noted, however, that there certainly are individuals, and probably in large number, to whom throughout life any use of T. would be injurious. We cannot honestly say more on the score of health against T. than can be urged against tea or any other luxury; and of nearly every luxury it is the least injurious. 'It is innocuous as compared with alcohol; it does infinitely less harm than opium; it is in no sense worse than tea; and by the side of high living altogether, it contrasts most favorably.'—Richardson. Dr. E. A. Parkes says, 'From moderate use I can see no harm;' and Sir Robert Christison concludes that 'the smoke has an extraordinary power in removing exhaustion, listlessness, and restlessness, especially when brought on by bodily or mental fatigue.'—A long, perfectly clean pipe, of an absorbing material like clay or meerschaum, which can suck up the oily matter before it reaches the mouth, is to be preferred; and it has been suggested that if a plug of cotton, saturated with a strong solution of citric or tannic acid, were placed in the stem, to filter the smoke, all the nicotine would be seized by and combine with the acid. The different kinds of T. exert a different influence according to the amount of their noxious ingredients. Thus, Cavendish, Pigtail, and coarse Shag yield the oily matters in much more abundance than Latakia or Turkish; hence the last two are termed mild tobaccos. Cigars tend more than pipes to produce dyspepsia; for in smoking them,



Flowering Top of Tobacco Plant.



Microscopic Structure of Tobacco Leaf.

TOBACCO-PIPES.

unless with a long mouth-piece, nicotine is absorbed. Snuffing has been deemed the least injurious form of the use of T., and chewing the most deleterious; yet sailors, who chew more freely than almost any other class, usually have vigorous health, and after long habit they can consume an almost incredible quantity: see *The Lancet*, 1847, I., 440.

T. has been used in medicine in the form of an enema, for relaxing the muscular fibres, in strangulated hernia, stricture of the bowel or urethra, tetanus, etc.; but in such cases it has now been superseded by chloroform. If it continue to hold a place in the Pharmacopœia, it will probably be as an antidote to strychnine.

Indian Tobacco (*Lobelia inflata*) has nothing in common with T. (see LOBELIA).

TOBACCO-PIPES: pipes of various materials used in the smoking of tobacco, the commonest being of a fine white clay, which has received the name *pipe-clay*. The first part of the manufacture is performed by trained children, who, with nice touch, roll out on a board a small piece of clay into a long slender cylindrical rod, at the end of which is then attached a lump of clay, just enough to form the bowl. These rudimentary pipes are arranged by dozens on a board, until they have become sufficiently hardened. The pipe-maker then takes a pointed iron wire, and, first dipping it into oil, pushes it into the end of the thin column of clay, and, having passed it through, forms the bowl with a folding brass mold. The wire is then withdrawn; and after a slight dressing with a knife, the pipes are slightly curved in the stem, and are laid aside to dry for a few days, when they are removed to a peculiar kiln whose interior chamber is only a *seggar* on a large scale, such as is used in making Pottery (q.v.). When thoroughly baked, the pipes undergo a kind of polishing or dressing, and are ready for sale. More expensive pipes are made of Meerschaum (q.v.): for various materials used for the tubes of these and other pipe-bowls, see PIPE-STICKS. *Brier-root pipes* have the bowl and stem of one piece of wood; and, though the stem is short, they partially absorb the oil produced in smoking, which, however, is perhaps as much the case with the common clay-pipe when new.

It is believed that pipes for smoking herbs for medicinal and other purposes were in use in England and elsewhere long before the introduction of tobacco. Colt's-foot, yarrow, mouse-ear, lettuce, and other plants are occasionally smoked, and no doubt have been so for centuries. A primitive pipe, still in use in some rural districts, consists of a stick of elder from which the pith has been removed, with a bowl formed of common clay and dried by the kitchen-fire. Pipes have been found near the Roman wall in Northumberland, and other Roman stations in Britain, suggesting at first the notion, now discarded, that they were used by the Roman soldiers. Many of these ancient pipes are remarkable for very small size, due probably to the high price of tobacco when introduced into Europe, and to the custom of inhaling the smoke by

the mouth and expelling it through the nostrils, thus gaining the utmost narcotic effect. Similar very small pipes have been found in N. America, and the same mode of smoking has always prevailed among the Amer. Indians. See Wilson's *Prehistoric Man*, II. Stone-pipes, or pipe-bowls, have been found in Britain, cut in rude forms, and apparently used by the insertion of a tube, perhaps a straw. Such pipe-bowls, but elaborately carved, are among the most remarkable American antiquities, and are still made by the Amer. Indians, often of very hard stones adorned with figures of men and animals. Some are adapted for two tubes, for two smokers at once. Among some of the Amer. tribes, great care is bestowed on ornamenting the pipe-stem; by others, on the bowl.

The clay-pipe, much the same as now used, probably came into use in Europe very soon after the introduction of tobacco. Aubrey, 1680, says that tobacco-smokers in England at first used silver pipes, 'but the ordinary sort made use of a walnut-shell and a straw.' In the reign of William III., pipes were occasionally of brass and iron. The pipe was, in earlier days, passed round the table—one man taking a whiff or two, and then handing it to his neighbor. The criterion of age is the *form*. The barrel-shaped bowl was most usual during the commonwealth and the reign of Charles II., though it was in many various shapes. In the reign of William III., a more elongated form of bowl became prevalent, introduced probably from Holland, though the barrel-shaped bowl still was used. In the middle of the 18th c., the wide-mouthed bowl, now nearly universal, became prevalent, and the spur, previously flat, to rest the pipe upon when in use, was elongated, after a fashion supposed also to have originated in Holland. The Scottish *cutty-pipe* and Irish *dudeen* are short clay-pipes.

The pipe-makers of London, as early as 1601, had privileges which gave them a monopoly. Holland has long been famous for pipe-making. The Dutch manufacturers were very jealous of rivalry. In the middle of the 18th c., a pipe manufactory was established in Flanders, and the Dutch makers determined to ruin it. The duties were too high to admit large importation; therefore they freighted a large ship entirely with tobacco-pipes, set sail to Ostend, and purposely wrecked her there. In accordance with the maritime laws of that city, the pipes were landed from the wreck, and sold at such 'ruinous prices' as defied competition; and the new manufactory was immediately closed.

TOBAGO, *tō-bā'gō*: island, most southerly of the W. India Windward Islands (see ANTILLES), belonging to Britain; 60 m. s.e. of Grenada, 20 m. n.e. of Trinidad; 26 m. long, $7\frac{1}{2}$ m. in greatest width; 114 sq. m. The island was discovered by Columbus 1498, and named by him Assumption; the name of T. is supposed to have arisen from the free use of tobacco by the Caribs when first visited by Europeans. Claimed by the Brit., then occupied by the Dutch and the French, it was finally ceded to Britain 1814. From its gloomy-looking mountains, dense forests, and

TOBERMORY—TOBIT.

abrupt precipices, descending to the sea, T. has been called the 'Melancholy Isle;' but, on nearer approach, the aspect becomes more pleasing, though still rough and irregular, being extensively occupied with conical hills and spurs, all connected by a ridge through the interior, whose greatest elevation is 1,800 ft. above sea-level. From the high ridge descend deep and narrow ravines, which terminate in small alluvial plains. Scarborough (pop. 1,200) is its cap., pleasantly situated on the shores of Rochley Bay. Plymouth, opposite Scarbórough, is the landing-place for passengers, etc., from the royal mail-steamers. Two-thirds of the island is still covered with primitive forests, comprising many varieties of hard-woods and ornamental trees. The geological formation is similar to that of Trinidad. The climate is considered salubrious; the thermometer ranges from 75° to 90°. The island produces sugar, rum, molasses, cocoa-nuts, cotton, coffee, and indigo; pimento also grows wild. T. was annexed to Trinidad 1889. In 1890 the revenue was \$42,068; expenditure \$44,969; debt, loan from Trinidad for construction of public works, \$24,300; imports \$113,738; exports \$94,143. The people are mostly of African race.—Pop. (1890) 20,727.

TOBERMO'RY: see MULL, ISLAND OF.

TOBINE, n. *tō'bīn* [Ger. *tobin*; Dut. *tabijn* (see TABBY)]: a stout twilled silk.

TOBIT, *tō'bit*. BOOK OF: one of the most curious and interesting of the Old Test. apocryphal books. It exists at present in Greek, Latin, Syriac, and Hebrew MSS., whose texts differ considerably, yet not materially. The oldest and most valuable is the Greek Septuagint; indeed, where the others depart from it, they possess little claim to respect. Since the argument of Nöldeke (*Monatsb. Berl. Ak.*, 1879, p. 45), the Greek text has been conjectured to be the *original*. It is not known when and where the book was written: Ewald selects Persia as the scene, and the middle of B.C. 4th c. as the date of its composition: the author he imagines to have been a Palestinian Jew who wrote in Hebrew, and conjectures that a translation of the work was made into Alexandrian Greek B.C. 1st c. But if the Greek text be the original, it can scarcely be referred to a date earlier than B.C. 2d c.; and Robertson Smith ascribes the authorship to a Jew of the eastern dispersion, writing perhaps in Egypt, but incorporating Persian elements in his story. That the contents of T. are not historical, is evident; yet till the period of the Reformation it was commonly received as such. Luther was the first to speak of it as a 'poetical,' i.e., imaginary, didactic production; and biblical critics since have generally agreed with him; though some contend for a historical basis. The leading incidents resemble in grotesque *miraculousness* the fantastic tales of the Arabian Nights. Tobit, sleeping outside the wall of his court-yard one night, is blinded by sparrows 'muting warm dung into his eyes;' his son Tobias is attacked while washing his feet in the Tigris, by a fish, which he kills, and under instruction from the angel Raphael secures from its liver and gall powerful drugs. The son then

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marries a Jewish maiden, Sara, seven of whose betrothed lovers had been successively carried off by an evil spirit, Asmodeus. Asmodeus is driven off by use of one of the drugs and with help of the angel, and then flies to the uttermost parts of Egypt, where he is bound. Old Tobit is cured of blindness by an application to his eyes of the other drug from the fish. Though the narrative is thus childishly absurd, the sentiments are often pious and didactic; the descriptions of social life are picturesque and apparently true.—For the place which this book holds in ecclesiastical use, see **APOCRYPHA**.

TOBOGGAN, n. *tō bŏg'gān*: sled made of a couple of thin planks fastened together, turned up in front, and shod with runners, originally used by the Indians of Lower Canada for carrying burdens over snow, but now extensively used in the sport of coasting or sliding down long slopes of frozen snow at great speed: V. to slide on a toboggan. **TOBOG'GANING**, n. *-gan-īng*, the exciting and favorite winter amusement of the Canadians with the toboggan *Note*.—The word *Toboggan* is said to be a corruption of Am. Indian *odabagen*, a sled. The form *tobaaken* (a sled) has been found by Skeat in an old English Micmac dictionary.

TOBOLSK, *tō-bŏlsk'*: government in the n.w. angle of Siberia; bounded n. by the Arctic Ocean, w. by the Ural Mountains, e. by the govts. of Yeniseisk and Tomsk; 531,-980 sq. m.—nearly one-fourteenth of the whole Russian empire. Branches of the Ural and Altai Mountains form a hilly region in the w. and s.e.; but the govt. is largely a vast plain, sloping to the banks of the principal rivers and to the shores of the Arctic Ocean. The chief rivers are the Ob (q v.) and its great navigable affluents, the Irtysh, Tobol, Om, and Toura. The soil is fertile in s. and middle districts; marshes covered with forests occupy the land n. of lat. 57°, and frozen marshes border the Arctic Ocean: see **TUNDRA**. The climate has great extremes; it is mild in the middle districts, very severe in the n., and warm in the s. Dogs, martens, ermines, silver and blue foxes, bears, deer, etc., eider-ducks, geese, ducks, etc., are principal animals. The chief crops are rye, oats, and barley. Agriculture employs the great mass of the inhabitants, except in the n., where hunting and fishing are general occupations. The luxuriant meadows of the south are taken advantage of for cattle-breeding. Timber, furs, and fish are chief articles of commerce. The people are mostly Russians; but there are also Ostiaks, Tartars, Bokharians, and Samoiedes.—Pop. (1882) 1,283,000; (1889) 1,313,400.

TOBOLSK': town of w. Siberia, cap. of the govt. of T.; at the confluence of the Irtysh and the Tobol; 1,976 m. e. of St. Petersburg, 1,535 m. from Moscow. It is well built, with timber houses and wide and regular streets, and its position on the two great rivers is picturesque; but its lower part is subject to almost annual inundation from the floods of the Irtysh in spring. Its situation, considerably n. of the great commercial highway between Russia and Siberia, and distant from the more productive regions of

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the country, is unfavorable for commerce. T. contains a large prison, capable of accomodating 3,000 prisoners; and the convicts condemned to exile in Siberia are assembled at this town, and thence deported to various parts of the country. Several regiments are stationed here.—Pop. (1883) 20,130; (1888) 20,175; (1890) 21,336.

TOCANTINS, *tō-kân-tēnz'*: important river of Brazil, rising in the province of Gojas, flowing n. through the province of Para, and joining the Para (q.v.), the s. branch of the estuary of the Amazon, 130 m. from the Atlantic. Its principal affluent is the Araguay, which joins it in lat. 6° s., and has a longer course, with greater volume of water than the T. The T. at its junction with the Araguay is 5,500 ft. wide; at its mouth it is 8 m. wide; total length, 1,100 m. The navigation, which is by trading-boats resembling floating houses, is dangerous, on account of numerous falls, sand-banks, and rapids. Boats descend from Porto Imperial (lat. 10° 30' s.) to the mouth of the T. in 20 to 30 days; the upward voyage occupies four or five months.

TOCHER, n. *tōk'ēr*, but in Scotch the *ch* is guttural [Gael. *tochar*, a marriage portion]: in *Scot.*, a marriage portion given by a father on the marriage of his daughter (see MARRIAGE): a dowry: V. to give a dowry to. TOCH'ERING, imp. TOCHERED, pp. *tōk'ērd*. TOCH'ERLESS, a. having no marriage portion.

TOCQUEVILLE, *tōk'vīl* or *tok-vēl'*, ALEXIS HENRI CHARLES CLEREL, Comte DE: French statesman, in the first rank of writers in the 19th c. on the science of politics: 1805, July 29—1859, Apr. 16; b. Verneuil, dept. of Seine-et-Oise. His father was the representative of an old family, the Clerels, proprietors of Tocqueville in Normandy: his mother was granddaughter of Malesherbes, academician, political writer, and magistrate, who defended Louis XVI. at the bar of the convention, and whose intrepidity was punished by the beheading of himself and all the most distinguished of his relations. Madame de T. and her husband narrowly escaped the guillotine by the fall of Robespierre; but they did not emigrate, like other royalist families, and they preserved their property. At the restoration 1815, the father of De T. reassumed the title Count. De T. was called to the bar at Paris 1825; and, after a short tour in Italy, entered the magistracy as *juge auditeur* at Versailles. In this situation he carefully studied the administrative system of France; and, struck by the perpetual recurrence of revolution, gave much thought to political questions. In 1831 he resigned his appointment at Versailles, and with his colleague there, Gustave de Beaumont, accepted a govt. mission to the United States, to report on the penitentiary system. The commissioners, after their return to Europe, published their report (*Du Système pénitentiaire aux États-Unis*, 1832; Eng. transl., Philadelphia 1833)—an admirable work, which modified French ideas of prison-discipline. But a more important result appeared 1835, when De T. published his great work, *De la Démocratie en Amérique*

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(Eng. transl. by Reeve, London 1835). In his introduction, he sought to show that a great democratic revolution has for centuries been going on in Europe. There is a general progress toward social equality, which must be regarded as a providential fact. In France it has always been borne on by chance, the intelligent and moral classes of the nation never having connected themselves with it, in order to hold and guide it. In the United States he found that the same revolution has been going on more rapidly than in Europe, and has indeed nearly reached its result in the absolute equality of conditions. There, accordingly, he thinks is shown what is about to result in Europe. He points out that the people in the United States may be strictly said to govern: they make the laws and they administer them. He draws from what he has observed the conclusion that democracy may be reconciled with respect for property, deference for rights, safety to freedom, and reverence for religion. He does not propose the laws and manners of the United States for other democratic peoples. He merely seeks, by a faithful picture of an existing democracy, to allay the dread of democratic progress, and to induce those at the head of affairs to recognize it as irresistible, and to seek to control it by wise concessions. *The Democracy* made at once an immense sensation. The accuracy of the statements, the skill with which the matter had been digested, and the beauty of the style, were praised by critics. The author was hailed as the continuator of Montesquieu, and the greatest political writer of his time. He became successively a member of the Acad. of Moral Sciences and of the French Acad. In 1835 De T. visited England, where his work had made him known, and where he received enthusiastic welcome from the leaders of the whig party. In the same year he married Miss Motley, an Englishwoman. He shortly afterward, by a family arrangement, entered into possession of Tocqueville. He stood, 1837, as candidate for the representation of Valognes in the chamber of deputies. His opponent was a retired mill-spinner, who raised the cry of 'No nobles' against him. De T. was defeated; but two years later he had become a great favorite with his neighbors, the Norman farmers, and they returned him to the chambers by an overwhelming majority. As a speaker, De T. had no gifts, but he exercised great influence on the legislature. Immediately after the Revolution, he was the most formidable opponent of the socialists and extreme republicans. He opposed Louis Napoleon, as a man who believed in his right to the throne as firmly as Charles X. De T. became, however, 1849, vice-pres. of the assembly; and, June to Oct. in the same year, minister of foreign affairs. At this time he vindicated the policy of the expedition to Rome, on the ground, it must not be forgotten, that it would secure liberal institutions to the States of the Church. After the *coup d'état*, he returned to Tocqueville, where he engaged in agricultural pursuits. He there wrote *L'ancien Régime et la Révolution* (Par. 1856; Eng. transl., London and New York

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1856), a work worthy of his fame. In 1858, June, he broke a blood-vessel, and left the bleak coast of Normandy for a warmer climate, at Cannes, where he died. T.'s *Œuvres et Correspondance Inédites* were pub., 2 vols. (1860), by his friend De Beaumont, who prefixed a biographical notice (Eng. transl., London and New York 1861).—De T. was the first to present a systematic philosophical discussion of the political institutions of the United States. His great work shows rare insight, unbiased judgment, clear vision of fundamental principles, and a profound tracing of them in their systematic and orderly development in political institutions.

TOCSIN, n. *tōk'sin* [F. *tocsin*—from OF. *toquer*, to touch, to strike, and *sin*, a sign, a bell (see TOUCH and SIGN)]: an alarm-bell; a signal given by the ringing of a bell.

TOD, n. *tōd* [Icel. *toddi*, a flock or ball of wool: Ger. *zote*, a lock or flock of wool: Dan. *tot*, a bunch of flax]: a bunch of anything fibrous, as hay; an old weight of wool of 28 lbs.; in *Scot.*, the fox—probably so called from its bushy tail; in *OE.*, a bush; a thick shrub: V. in *OE.*, to yield in weight.

TODARS, *tō'dērz*, or TODAWARS, *tō'da-wērz*, or THODAS, *thō'daz*, or TUDAS, *tū'daz*: remarkable pastoral race inhabiting the upper part of the Neilgherry Hills (q.v.), in s. Hindustan, claiming to be the aborigines of the whole hill country: see INDIA—*Inhabitants*. They are rapidly diminishing in number, chiefly through the practice of Polyandry (q.v.) and their **not** allowing intermixture with other races; in 1881 they numbered 675. They are of dull copper color, tall, well proportioned, and athletic, with finely molded limbs and bold, independent carriage; the nose aquiline, with black, bushy hair and beard. The dress of the men consists of a single toga, worn so as to leave the right arm free, not unlike the plaid of the Scottish highlander. The T. are indolent and dirty. The buffalo is their great dependence; they attempt no culture of land, obtaining what grain they require from the agricultural tribes, who pay it in the shape of tribute (*goodoo*) (though often rather as a kindness) for their lands, over which the T. assert an imaginary right. The only use the T. get of their buffaloes, besides their milk, is to furnish sacrifices to the manes of the dead. They are wont to salute the sun at his rising and setting, and believe that the soul after death goes to the 'great country.' They worship only 'ideal' gods, without images. They have never been known to steal. Their language is of the Dravidian stock; it has no written character. They are strangely allowed to collect their tribute of grain, by which they are supported in idleness and plenty.—See *Statistical Memoir of a Survey of the Neilgherry Mountains* (1861); Harkness's *Description of a Singular Aboriginal Race* (1832); Burton's *Goa and the Blue Mountains* (1861); Tyler in *Nature* (1873).

TO-DAY, n. ad. *tū-dā'*: see under To,

TODD, *tŏd*, JOHN, D.D.: author and Congl. minister. 1800, Oct. 9—1873, Aug. 24; b. Pittsfield, Mass. He graduated at Yale 1822; kept a school one year; studied theol. at Andover, and was ordained minister 1827. He held Congl. pastorates successively at Northampton, Mass. (1833), Philadelphia (1836), First Church, Pittsfield, Mass. (1842–72, when he retired on account of age). He had a part in founding Mt. Holyoke Female Sem. He was author of nearly 30 vols., and some of his writings had an enormous circulation: many were translated into various languages—German, French, modern Greek, Dutch, Danish, Italian, Arabic, Armenian, Turkish, and Tamil. He won great distinction also as preacher and lecturer, and was a frequent contributor to religious periodicals. Among his most successful didactic works were: *Lectures to Children*; *Student's Manual*; *Hints to Young Men*; *Hints and Thoughts for Christians*.

TODD, THOMAS: jurist: 1765, Jan. 23–1826, Feb. 7; b. King and Queen co., Va. He served as a soldier from Va. during the latter part of the revolution; afterward removed to Ky., studied law, and became clerk of the district court, and later of the court of appeals; 1801–06 was judge of the court of appeals; 1806–7 chief-justice of Ky.; and from 1807, Mar. 3, until his death, associate justice of the U. S. supreme court. He died at Frankfort.

TODDLE, *v. tŏd' dl* [O. Dut. *touteren*, to tremble, to see-saw: Ger. *zotteln*, to reel, to stagger (see TOT 1)]: to walk unsteadily, or with short tottering steps, as a child: N. *familiarly*, a walk or saunter. **TODDLING**, imp. *-dling*. **TODDLED**, pp. *tŏd' dld*.

TODDY, *n. tŏd' dī* [Hind. *tari*, *tadi*, the juice of the Palmyra tree; *tar*, a palm-tree: the sound of the *r* in the Hind. word is represented by *d* in Eng.]: the juice or sap drawn from various kinds of palms in the East Indies; a spirit or liquor prepared from it; a mixture of spirits and hot water sweetened; punch: *grog* is a mixture of spirits and cold water (see SPIRIT). **TODDY-LADLE**, a small ladle or deep spoon for mixing toddy in the tumbler or bowl, and for lifting a portion of it into a wine-glass.

TODI, *tŏ'dē* (anc. *Tuder*, *Tudertum*): ancient town in central Italy, province of Perugia; about 24 m. s. of the city of Perugia, on an elevation overlooking the Tiber. Ruins of the Etruscan wall which surrounded it, and of an old Roman temple, are visible. It contains a cathedral with frescos by Le Spagna, and the beautiful church of S. Maria della Consolazione, designed by Bramante, and considered by many not only his best work, but one of the finest buildings of Italy.—Pop. about 15,000.

TODLEBEN, *tŏt' lā-bén* (or **TOT'LEBEN**), EDUARD IVANOVICH: Russian general of engineers: 1818, May 20—1884, June; b. Mitau, Russian province of Courland; of German extraction. After studying at Riga, he entered the College of Engineers at St. Petersburg. He was second-capt. in the engineer corps when the Russian army entered the Danubian Principalities 1853, and served in

TODMORDEN—TOE.

the campaign of the Danube under General Schilders. His genius as a military engineer was discovered before the Russian army crossed the Pruth, on its retreat from the Principalities; and when the French and English troops undertook the siege of Sebastopol, Col. T. was sent to assist in its defense. His principle was to watch the works of the allies, and to establish against them on every point a superiority of fire, by multiplying the number and increasing the calibre of his guns. The prodigious activity displayed by the Russians in making good the damage by the heavy fire of the enemy astonished the allied army. Massive earthworks, mounted with formidable batteries, rose as by magic at each threatened point. According to T., the defense was rapidly asserting an engineering superiority over the attack. The Malakoff, however, was carried by assault, and the allies entered Sebastopol (see the story of the war in Kinglake's work, *The Invasion of the Crimea*). At the battle of Inkermann, T., who was on the spot by chance, seeing that the Russian artillery was in danger of being taken, promptly halted a regt., caused four guns to open fire on the allies, and gave time to the artillery to retreat. During the latter part of the siege, he was wounded in the leg. He wrote a history of the war in the Crimea, entitled *Défense de Sebastopol*, which gives a thoroughly Russian account of the Crimean war—trustworthy in all that relates to the Russian army and to the work of the siege. For services in the siege, he was created a general and decorated. In 1865 he visited England, and was cordially received. He was called to undertake the siege of Plevna, which, after a brilliant defense, he took. He was subsequently made commander-in-chief of the Russian army in Bulgaria.

TODMORDEN, *tōd-mōr'dēn*: market-town of England, partly in the county of Lancaster, partly in the W. Riding of Yorkshire; 8 m. n.n.e. of Rochdale, about 207 m. n.n.w. of London; on the Manchester railway. The town is well built; has several churches and schools, and manufactures of cotton. Coal abounds in the vicinity. The town comprises territory belonging to three townships.—Pop. (1881) 23,862; (1891) 24,725.

TO-DO, n. *tū-dō* [*to* and *do*]: *familiarly*, hurry; bustle; commotion; ado.

TOE, n. *tō* [Icel. and AS. *tá*; Dut. *teen*; Low Ger. *taan*, a toe: perhaps allied to Icel. *teina*, a shoot: Dut. *teen*, a twig: AS. *tán*, a shoot, the toes being regarded as the twigs or branches of the foot]: a digit of the foot, corresponding to a digit or finger of the hand; one of the foreparts of the paw or foot of a beast; the forepart of a hoof, as of a horse: V. to touch with the toes, as to *toe* the mark. **TOED**, a. *tōd*, having toes. **FINGER-AND-TOE**, a disease in turnips, when, instead of bulbs, they fork into *finger-and-toe-like* divisions.

TOFFY—TOGA.

TOFFY, n. *tŏffĭ*, or **TOF'FEE**, n. *-fĭ*: a hard-baked candy or sweetmeat, made of molasses or sugar mixed with butter, and boiled to a consistency; called *taffy* in the United States.

TOFORE, ad. *tŭ-fŏr'* [AS. *toforan*]: in *OE.*, before; formerly: **PREP.** in *OE.*, before.

TOFT, n. *tŏft* [Norw. *tuft*, a clearing]: in *OE.*, open ground; a plain; a knoll; in *law*, a message or homestead.

TOGA, n. *tŏ'gă* [L. *toga*, a gown—from *tego*, I cover]: a gown; the loose gown or mantle worn by the anc. Romans.

TO'GATED, a. *-gă-tĕd* [L. *togātus*, gowned], also in *OE.*,

TO'GED, a. *-gĕd*, dressed in a gown; wearing a gown.

TOGA VIRILIS, *vĭ-rĭ'lis* [L. *virilis*, manly]: the gown assumed by Roman youths at the age of fourteen. **Togs**,

n. plu. *tŏgz*, in *slang*, clothes. **TOGGED OUT**, *tŏgd*, dressed up, as if for a party.—The *Toga* was the principal outer



Roman Toga.

garment of the Romans, originally perhaps the only one: subsequently an under-garment, the *tunic*, was added. It was probably of Etruscan origin, yet it came to be considered the distinctive badge of the Roman citizen, whence the Roman people are called *togati*, or *gens togata*; consequently, when the Cisalpine Gauls received the rights of citizenship, their country was spoken of as *Gallia togata*, in opposition to Transalpine Gaul, or *Gallia braccata* (breeched). At first the T. was apparently semicircular in shape—so, at least, say Dionysius, Quintilian, and others; but afterward, when it came to be an elaborate and complicated dress, it must have been a smaller segment than a semicircle. The

mode of wearing it is difficult to describe, and required considerable art to make the folds fall gracefully. It was woolen cloth, and, except in the case of mourners, was white. Accused persons sought to excite sympathy by going about in a soiled (*sordida*) and unsightly toga; while those who were seeking office were wont to dress themselves in garments artificially whitened with chalk; hence their name *Candidati* (lit., shining ones), candidates. The *toga praetexta* had a broad purple border, and was worn by children and by most, though not all, of the magistrates. The *toga picta*, so called from being embroidered, was worn by generals receiving their 'triumphs.' Under the emperors, the T. as an article of common wear fell into disuse, the Greek *pallium* and other garments being used instead; but it continued to be used by officials on solemn or festive occasions,

TOGETHER—TOIL.

TOGETHER, ad. *tû-gëth'ér* [AS. *togædere*, together: Dut. *gaderen*, to gather, to collect]: in company; in the same place; in the same time; in concert; in union; without break. **TOGETHER WITH**, in union with.

TOGGENBURG, *tog'ghên-bûrg*, or **TOKENBURG**, *toch'en-bûrg*: district in Switzerland, in the canton of St. Gall (since 1803); formed by the long and fertile valley of the Thur. It was formerly governed by counts of its own, who ranked as the richest and most powerful land-proprietors in the country. On the extinction of their line 1436, the possessions passed to the Barons of Rasen, who sold them 1469 to the abbot of St. Gall. The valley is thickly peopled by an industrious race, who manufacture muslin and cotton. The most interesting spot in the region is Wildhaus, in the Johannisthal, a little mountain village more than 2,000 ft. above the level of Lake Zürich, where Ulrich Zwingli, Swiss reformer, was born.

TOGGERY, n. *tög'gër-î* [L. *toga*, a gown]: in familiar language, clothes; garments.

TOGGLE, or **TOGGEL**, n. *tög'gl* [probably from Dut. *tokkelen*, to touch; or Ger. *stock*, a stick]: among seamen, a small wooden pin or short bar of wood tapering toward both ends, with a groove round its centre, placed through bight or eye of a rope in order to hold it in its proper position.

TOG'GLE JOINT: a knee-joint or elbow-joint; joint formed by two pieces (bars or plates) articulating endwise. The T. J. may be represented by the leg flexed at the knee, or the arm flexed at the elbow. In mechanics, this joint is used by applying power (e.g., by means of a screw) against the 'knuckle' or point of flexure, thus producing a powerful pressure through the extension of the two bars or leaves. The T. J. is employed in different kinds of presses, thence called toggle presses. The T. J. is utilized in the Stanhope printing-press, the platen being there depressed by the toggle and raised by springs. It is used also in making electrotypes molds from type, and in hay-presses, cotton-presses, etc.

TOGS, n. plu. *tögz*: see under **TOGA**.

TOIL, n. *toyl* [O. Dut. *tuylen*, to till the ground; *tuyt*, agriculture, labor: comp. Gael. *toil*, will, inclination (see **TILL** 3)]: fatiguing labor; labor oppressive to the mind or body: V. to labor with pain or fatigue; to work with fatigue. **TOIL'ING**, imp.: **ADJ.** laboring with fatigue. **TOILED**, pp. *toyld*. **TOIL'ER**, n. *-ér*, one who toils. **TOIL'FUL**, a. *-fûl*, wearisome. **TOIL'LESS**, a. *-lës*, free from toil. **TOIL'SOME**, a. *-sûm*, laborious; attended with fatigue or pain; wearisome. **TOIL'SOMELY**, ad. *-lî*. **TOIL'SOMENESS**, n. *-nës*, state of being toilsome or laborious.—**SYN.** of 'toil, n.': work; labor; exertion; employment; occupation; task; travail; drudgery.

TOIL, n. *toyl*, usually in the plu. **TOILS**, *toylz* [F. *toiles*, toils, something to inclose or entangle wild beasts in; *toile*, cloth—from L. *tēla*, a web—from *texĕrĕ*, to weave]: a net or snare; a web or string spread for taking prey.

TOILET—TOKAY.

TOILET, n. *toyl'èt* [F. *toilette*, toilet-cloth, toilet—from *toile*, cloth (see **TOIL** 2)]: a cloth thrown over the shoulders while dressing the hair or beard; the cloth that covers a dressing-table—hence, the dressing-table itself; mode or operation of dressing; all matters connected with personal cleanliness and the adjustment of articles of dress—in these last two senses also spelled **TOILETTE**. **TOIL'INETTE**, n. *-î-nèt'* [F.]: a cloth the weft of which is of woolen yarn, and the warp of cotton and silk. **TO MAKE ONE'S TOILET**, to dress.

TOISE, n. *toyz* [F. *toise*, a fathom: It. *tesa*, tension—from L. *tensus*, pp. of *tendo*, I stretch—as if measured by the width of the outstretched arms]: old French measure of length, equal to 1·94903659 metres, or 6·3946 Eng. feet.

TOKAT, *tō-kât'*: decayed town of Turkey in Asia, w. of Trebizond, 60 m. from the s. shore of the Black Sea; at the mouth of a defile, on the banks of a small stream. It is inclosed by mountains on three sides, so that in summer the heat is intolerable. Gardens and vineyards extend along the slopes of the valley above the town. The town consists principally of wooden huts, disposed in narrow and dark streets. It formerly had considerable trade, but this has declined. Extensive copper-furnaces, however, in which copper ore, brought from near Diarbekir, is smelted, still employ many persons. Cotton-printing and dyeing also are carried on.—Pop. 35,000.

TOKAY, n. *tō-kā'*, a highly prized wine produced from vines grown on the Hegyallya Mountains n. and n.e. of *Tokay*, in Hungary. The T. wine-district comprises about 15,000 acres, the produce from the Mezesmali, a detached rounded eminence near Tokay, being most esteemed. Great care is bestowed on the proper assortment of the grapes (never gathered till fully ripe); also on preparation of the wine—of which about 34 sorts are reckoned; but all may be grouped into the two classes, sweet and dry. The wine is brownish yellow while new, changing to a greenish hue as it grows older. The average annual produce of the T. vineyards is 1,500,000 imperial gallons of the dry, and 50,000 gallons of the sweet, wines. T. wine has immense reputation on the continent for its restorative and tonic qualities; and so much is it esteemed in Hungary, that every considerable proprietor for miles round makes it a point to acquire some property in this vine-district, that he may be able to procure his wine from his own vineyards. On this account, genuine T. (specially the more valuable sweet or imperial T.) is obtainable by wine-merchants in small quantity only, and is largely mixed with inferior wines. The vine-gathering is celebrated at Tokay, Maad, and Tallya, chief places of the district, as a national fête, to which the magnates of Hungary with their families flock from all quarters; and during the festivity, many times more than the whole value of the vintage is expended. The crowd of visitors is swelled largely by the wine-dealers and medical agents, who sometimes give extravagant prices for good qualities

of wine. Large quantities of 'imitation' T. are made by French and German chemists, and sent to all parts of Europe, not excepting Hungary itself, so that purchasers need to guard against imposition.

TO-KEI': a variant of Tōkiō (q.v.).

TOKEN, n. *tō'kn* [Goth. *taikns*; Ger. *zeichen*, a mark, a token: Icel. *teikna*; Dan. *tegne*, to mark, to draw: Dut. *teeken*; Icel. *teikn*, a token]: something meant to represent another thing; a mark; a sign; an indication; a symptom; a memorial of friendship; a stamped piece of metal used as coin, but worth much less than its nominal value, and intended to serve a temporary purpose: in the *Scotch Presb. churches*, a stamped metal ticket of admission to the Lord's Supper: in *printing*, ten and a half quires of paper: V. in *OE.*, for BETOKEN. TO'KENLESS, a. -*lē's*, without a token.—*Tokens*, or stamped pieces of metal or other material intended to serve as evidences of value which they did not possess, first came into use in England in the reign of Henry VIII., in the lack of any authorized coins for the fractions of a penny; and in the



Fig. 1.—Token of the Triumph, or Pageant Tavern, Charing Cross, 1661.

reign of Elizabeth, stamped tokens of lead, tin, and even leather, issued by vintners, grocers, and other tradesmen,



Fig. 2.—Token of the Mermaid Tavern, Cheapside, London, about beginning of 17th century.

passed largely from hand to hand, and were payable at the shops where issued. The corporations of Bristol, Oxford, and Worcester also had their tokens. In the face of later royal prohibitions, private tokens, principally of brass, continued to circulate, especially during the civil war. Numerous tradesmen's tokens, mostly of copper, were again struck during the scarcity of money at the close of the 18th c. On account of the scarcity of current silver money, previous to the new coinage of 1817, silver pieces known as Bank Tokens, of the respective values of 5s., 3s., and 1s. 6d., were issued by the Bank of England: they were called in on the revision of the coinage.—See Chambers's *Book of Days*, I. 535.

TŌKIŌ, *tō'kyō* ('Eastern Capital,' as distinguished from *Saikiō* (Kioto), the 'Western Capital'): chief city, and since 1869, March 26, cap. of Japan; in the e. of the main island of the Japanese group, on both banks of the Sumida, a large and rapid river (called sometimes *O-gawa*, or 'The River'), spanned by six wide bridges (varying in length from 750 to 1,050 ft.), at the head of the Bay of Yedo; and traversed by a vast network of canals: lat. $35^{\circ} 40'$ n., long. $139^{\circ} 47'$ e.: area about 28 sq. m., nearly equal to that of Paris.—Pop. (1889) 1,138,546; (1898) 1,440,121. Until 1868, Sep. 13, i.e., during the continuance of the Tokugawa (q.v.) shogunate, T. was known as YEDO ('River Door'). It was originally a rude fortress, founded 1456, surrounded by a few scattered villages, much of the more level parts of the present city being under water, or a mere succession of lagoons which have since been filled in. In 1598, Iyeyasu, founder of the Tokugawa line of Shoguns, laid out a city here and made it his capital. Under the shoguns, T. (Yedo) was divided into three parts: (1) The *O-shiro* or Castle, ramparted and moated, area 1.7 sq. m., circumference nearly 5 m. Here was the shogun's palace—where the mikado also resided when he removed his court to T. In 1873, May, this palace was burned down, and the emperor removed to the Yashiki, or mansion of the Prince of Kishiu, where he continued to reside until the recent completion of his own new palace. (2) The *Soto-shiro*, the portion outside the castle, also ramparted and moated. In this space chiefly were situated the Yashikis of the daimios, or territorial nobles, who with many thousands of their retainers were compelled to spend a large portion of the year in Yedo, under the eye and control of the shogun. (3) The *machi*, or tradesmen's part, extending all round the Soto-shiro, and across the river. For administrative purposes T. is now divided into 15 *ku* or districts, two of which, Honjo and Fukagawa are e. of the river. Kojimachi in the very centre of the city contains the castle, the parade-ground, most of the government offices, courts of justice, foreign legations, and the *Kobu-dai-gaku*, commonly called the Imperial College of Engineering (now a dept. of the univ.), with a large and efficient staff of foreign professors. North of the castle and between the two moats lies Kanda; in this district are situated the Nobles' School, and the Nobles' Club (both large buildings in European style), and the Imperial Univ., which, when founded 1856, bore the curious name *Ban-shō shirabe-jō*, or 'Place for examining Barbarian Writings.' This was changed 1863 to *Kai-sei-jō*, or 'Place for transforming and completing,' and is now *Dai Gaku*, or (place of) 'Great Learning.' In this part of the city is also the temple of Kanda or *Kanda Mio-jin*, where are worshipped *O-na-muchi*, the aboriginal deity of the country (said to have abdicated in favor of the mikado's ancestors, when they descended from heaven), and his adopted brother. Not far from this is *Sei-do* or the temple of Confucius, 'charmingly situated on a hill-side, in the midst of a splendid grove of trees.' Under the shoguns

this was the univ. for the study of Chinese literature. It is now a public library of native, Chinese, and foreign books. Near Seido is the public park of Uyeno, where the museum is, and where the 'exhibition' was held. This property belonged originally to the Todo family, but was taken by the shogun, 1625, as a site for a set of Buddhist temples that should surpass all others in Japan. The main temple (burned down 1868 during a bloody battle between the imperialists and the supporters of the shogun) is said to have been 'one of the chief triumphs of Japanese architectural skill, and was considered the metropolitan temple of all Japan.' The high priest, always a son of the reigning mikado, was kept here for political reasons. T. abounds in temples (both Buddhist and Shinto), the most popular of which is perhaps the temple of K'wan-on (commonly called the 'goddess of mercy'), in Asakūsa, to which thousands of the middle and lower classes daily resort for devotion, but chiefly for pleasure. Booths and stalls and 'shows' of all sorts abound in the neighborhood. In the public gardens of Shiba are the mortuary temples of seven of the Tokugawa shoguns, standing in the extensive and finely wooded grounds of the temple of *Zo-zo ji*, which was under the protection of Iyeyasū. The main building was destroyed by fire (the work of an incendiary) 1874, Jan. 1.

T. stands in a great plain extending n. and s. about 100 m., and from the coast to the mountains 20 to 60 m. This plain, one of the most fertile in Japan, is tilled with great skill and labor, irrigation and manuring being adopted to the fullest extent. It is traversed by many large rivers, from one of which an abundant water-supply is brought 40 m. to T. Smaller streams intersect the plain in every direction, and form rich and lovely valleys, the ridges between which rise at very few places more than 200 ft. above sea level. T. is connected with Yokohama, Kyoto, Ozaka, Kobe, etc., by several lines of railway; and a large extent of telegraphic line now gives it close communication with the s., n., and w. of the empire; and with the outside world by cable from Nagasaki.

The main body of the new imperial army is located and drilled in the capital. Its creation after the great revolution of 1868 was superintended by French officers. The Military College is still under French instructors. There is a large arsenal, well stocked with excellent modern machinery, in T.; also a naval college with British instructors, where cadets for the marine service receive a good scientific education and practical training. The Medical School, a part of the university, has a large and efficient staff of German professors. In 1889 T. had 328 public, and 443 private primary schools. Horse-cars run along the *Tōri*, or principal street. The police force is numerous and effective, and there are fire companies of about 2,000 men. Gas is used for street and shop lighting. Numerous newspapers (including more than a dozen dailies, edited and conducted with singular ability) and many periodicals and magazines are published, though the press (as elsewhere in

Japan) suffers severely from govt. censorship. The Japanese parliament or 'diet' meets here, and T. is the intellectual as well as the political centre of the country.—In 1869, Jan. 1, T. was opened to foreign commerce, but owing to the shallowness of the Bay of Yedo, the proximity to Yokohama (18 m.), the chief seaport of the country, and other causes, direct foreign trade is small; and Tsūkiji ('made land'), as the foreign settlement is called, is practically abandoned to the missionaries.

T. has several woolen, silk, and paper mills; and much is done in bronze-work, porcelain-painting, manufacture of toys, fans, curios, etc. During the winter, fires are almost nightly occurrences, and the whole city has been burned over several times. In 1601 the whole city was laid in ashes: 1657 (it is said) 107,046 persons lost their lives; 500 daimio-mansions, 770 hatamoto-residences, 350 temples, and 1,200 streets are said to have been destroyed. In 1668 another great fire almost wiped out the city. In 1855 a single conflagration destroyed fully one-fourth of the city, and in 1876 in one night 8,000 houses were burned. This arises from the universal use of wood in building, and the slightness of construction. Brick and stone and foreign methods of construction, however, are now rapidly superseding native materials and methods, especially in the business part of the city. The whole business part of the city is studded with clay fire-proof *kura* or store-houses, into which all the chief valuables are hurriedly thrust on the breaking out of a fire in the vicinity, and the doors and windows cemented with clay which is kept in readiness—lighted candles having been placed inside before closing the last door in order to exhaust the inflammable oxygen of the inclosed air.

Earthquakes also have been destructive. One in 1703 caused 37,000 deaths. Another, 1855, Nov. 11, threw down 14,000 dwellings, and 16,000 *kura* or fire-proof godowns, and caused a loss of 100,000 lives.

Under the shoguns the pop. of T. must have been very large, owing to the large bodies of military retainers which the daimios were compelled to bring and keep with them during their long compulsory annual sojourn in the city. The pop. has been stated as high as several millions, but it is probable that it never exceeded that of the present city under the new *régime*.

Much of the glory of old T. (Yedo) has vanished, many stately palaces and rich temples having been burned to the ground, or allowed to decay. The new buildings are of European or semi-European style; fire-eating, two-sworded men no longer throng the streets, and the Kago and Norimono have disappeared before the jin-riki-sha and the horse-car. But the chief natural beauties of the city remain—the 30 m. of tortuous moats, with their summer blaze of lotus-flowers, and the exquisitely beautiful parks and gardens, with their luxuriant flowers and rich wooding.

Brit. *Consular Reports*; Adam's *History of Japan*; Grif-fis's *Mikado's Empire*; Aimé Humbert's *Japon Illustré*; Maurice Dubard's *Japon Pittoresque*; Sir Rutherford Al-

TOKUGAWA.—TOLAND.

cock's *Capital of the Tycoon*; Oliphant's *Narrative of Lord Elgin's Mission*; *The Treaty Ports of China and Japan*; Mossman's *New Japan*; Satow and Hawes's *Guide to Japan*; Rein's *Japan*.

TOKUGAWA, *tō'kū-gá'wá*: family name of the 'dynasty' or line of Shoguns (q.v.), or commanders-in-chief, who virtually ruled Japan from 1603, when the mikado appointed Tokugawa Iyeyasū (1542–1616) to the office of *Sei-i-tai-shogun*, or 'Barbarian-subduing-great-general,' to 1868, when the office of shogun was abolished, the feudal system came to an end, and the mikado took the government into his own hands. The Tokugawas are said to be descendants of the Minamoto, powerful military family which sprang from Emperor Sei-wa in the 9th c. At the time of his appointment as shogun, Iyeyasū was lord of Mikawa, and of the eight provinces of the Kwantō (the region e. of the Hakone range of mountains) which he had received in 1590 from Taiko-sama (q.v.). From 1598 the capital of the T. was Yedo, now Tōkiō (q.v.).

TOLA, n. *tō'lä* [Skr. *tolna*, to weigh]: in *India*, a weight for gold and silver, about 180 grains troy.

TOLAND, *tō'land*, JOHN: English deistical writer: 1669 (or 70), Nov. 30—1722, May 11; b. near the village of Redcastle, county of Londonderry, Ireland. His parents were Rom. Catholics, and he was brought up in that faith. His baptismal name was Janus Junius; but ridicule at school led him to change it to John. He entered the Univ. of Glasgow 1687, but removed to the Univ. of Edinburgh, where he took the degree M.A. 1690. Thence he passed to Leyden, where (having abandoned at Edinburgh the Rom. Cath. faith) he began theological studies with a view to the nonconformist ministry. After about two years he returned to England, and resided at Oxford, where his vanity, and the boldness of his opinions on religion, attracted notice. Here he prepared in great part the work *Christianity Not Mysterious* (London 1696), in which he avowed his principles. The work made a sensation in the theological world, was censured by convocation, and led to several replies; and in the following year T. returned to Ireland. There he was received as unfavorably as in England, and his book was burned publicly by the common hangman, by express vote of the Irish parliament. T. returned to London, where he published a defense; but soon turned from theological to political and literary subjects. His pamphlet *Anglia Libera*, on the succession of the House of Brunswick, led to his being received with favor by the Princess Sophia at the court of Hanover, and to his being sent on a kind of political mission to some German courts.

During his residence abroad, he published 1702 a vindication, in a moderate tone, of his book against the judgment of the convocation; but 1705, he fully avowed himself a pantheist, being emboldened by the patronage of Harley, in whose service he had engaged as a political pamphleteer, and by whom he was sent to Holland and

TOLBOOTH—TOLEDO.

Germany 1707, in a capacity which, however disavowed, was plainly that of a political spy. He returned to England 1710; and having separated from his patron, he engaged as a partizan pamphleteer on the side of Harley's adversaries. His after-life was that of a literary adventurer, and was checkered by literary conflict and pecuniary struggle—forming one of the most painful chapters in Disraeli's *Calamities of Authors*. He died at Putney.—Of his many works, a few are the following: *Christianity Not Mysteious: a treatise showing that there is nothing in the Gospel contrary to Reason, nor above it* (Lond. 1696); *Apology for Mr. Toland* (1697); *Life of Milton*, prefixed to Milton's works, 3 vols. folio (1698); *Anglia Libera, or the Limitation and Succession of the Crown explained and asserted* (1701); *Vindicus Liberius, or Mr. Toland's Defence of Himself against the Lower House of Convocation* (1702); *Socinianism truly stated* (1705); *Reasons for naturalizing the Jews* (1714); *State Anatomy of Great Britain* (1714); *Nazarenus or Jewish, Gentile, or Mahometan Christianity* (1718).

TOLBOOTH, n. *tōl'bōth*: a booth or stall where taxes were collected; a town jail or prison.

TOLD, v. *tōld*: pt. and pp. of **TELL** (q.v.).

TOLEDO, n. *tō-lē'dō*: a sword-blade of the finest temper, originally from *Toledo*, in Spain; a sword having such a blade.

TOLEDO, *tō-lē'dō*: city, port of entry, and cap. of Lucas co., O.; on the Maumee river, and on the Wabash and Erie and the Miami canals, and the Cincinnati Hamilton and Dayton, the Columbus Hocking Valley and Toledo, the Cincinnati Jackson and Mackinaw, the Flint and Père Marquette, the Lake Shore and Michigan Southern, the Michigan Central, the Northwestern Ohio, the Ohio Central, the Toledo Ann Arbor and Northern Michigan, the Toledo Columbus and Cincinnati, the Toledo Findlay and Springfield, the Toledo St. Louis and Kansas City, the Wabash, and the Wheeling and Lake Erie railroads; 53 m. s.s.w. of Detroit, 92 m. w. of Cleveland; 24 sq. m. As a commercial centre, T. occupies an unusually advantageous position. It is 5 m. from the mouth of the Maumee river in Maumee Bay, the w. extremity of Lake Erie; and 8 m. from the lake proper: it thus has direct communication with all ports and important places on the lake. The beautiful harbor will accommodate the largest vessels, and the river and bay afford a safe channel from the city to the lake. The numerous railroads and the two canals are factors of vast importance in the development of the city's commerce and trade. For years, much as they relieved the pressure on the river, bay, and lake traffic, that traffic increased so rapidly that the channel was entirely inadequate to the demand on it. In this emergency the federal govt. came to the aid of the city, and constructed a new and straighter channel, which cost when completed at least \$3,000,000. T. is the port of the Miami customs district. In the year ending 1903, June 30, imports of merchandise were in value \$507,900,

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and exports \$785,724. Domestic exports (1890) included corn, 2,528,342 bushels, valued at \$908,027; oats, 20,050 bushels, \$5,015; wheat, 357,251 bushels, \$277,585; bituminous coal, 23,287 tons, \$40,808; and hewn lumber, 1,208,500 cubic ft., \$375,775. Of foreign shipments (1890) \$13,993 were in American steam-vessels, \$59,072 in American sailing-vessels, \$548,292 in foreign steam-vessels, \$986,939 in foreign sailing vessels. The shipping entrances were 66 American vessels of 9,871 tons and 207 foreign vessels of 72,190 tons—total vessels 273, tonnage 82,061; clearances were 31 American vessels of 3,854 tons and 214 foreign vessels of 74,881 tons—total vessels 245, tonnage 78,735. There were 63 vessels of 16,484.33 tons enrolled and licensed at custom-house. In 5 months ending 1902, May 31, arr. 450 vessels, tonnage 326,507; cleared 466, tonnage 342,719.

In 1901-2 the city was divided into 15 wards, and had net public debt of \$5,446,241. The valuation of real property was \$50,385,650, personal \$14,230,660, tax rate \$2.96 on \$100. There were 60.62 m. of sewers, which had cost \$1,038,672, and a system of water-works which had cost \$1,056,339. The public school system had 42 school buildings, valued at \$1,479,000; and a manual-training school under control of a special board of trustees. There were 8 lines of street railroads and 6 parks: City Park, Court-house Square (7 acres), Metropolitan Park, Riverside Park (46 acres), Schützen Park, and Speranza Park. The libraries were: Toledo Public (in a new building that cost \$69,000), Public, Law, Ursuline Acad., and St. Patrick's. Among public and charitable institutions, were 12 hospitals, reformatories, etc. One of the most noted institutions is the State Lunatic Asylum, the first in the state on the separate cottage system. In front of the courthouse is a statue of Pres. McKinley, unveiled 1903. There are 91 churches, including: Meth. Episc., Rom. Cath., Lutheran, Bapt., Congl., Presb., Prot. Episc., Jewish, and Christian, Christian Science, Disciples of Christ, Ger. Evang. Ref., Salem Evang. Assoc., Seventh-day Bapt., Unitarian, and United Brethren, 1; besides about 20 missions.—1902, Sept., there were 6 nat. banks (cap. \$2,250,000), 2 sav. banks (cap. \$270,000), 1 trust co., 1 priv. bank. Publications: 6 daily, 10 weekly, 2 semi-monthly, and 11 monthly periodicals. Trade and commerce were represented by a chamber of commerce, produce exchange, and merchants' and manufacturers' exchange. The industries include the largest wagon-works in the world, planing and molding mills, sash and blind factories, bridge and boat-building establishments, carriage factories, and manufactories of car-wheels, cabinet-work, bent wood, steam-engines, boilers, iron-work, beer, high wines, and agricultural implements. T. receives large quantities of iron ore, lumber, shingles, and grain; and its grain elevators have aggregate capacity of more than 5,000,000 bushels, while a single one can store 1,500,000 bushels at one time. Its manufacturing interests have been greatly stimulated within a few years by the discovery and development of petroleum and natural gas veins in the n.w.

TOLEDO.

part of the state.—T. was formed by the union of the villages of Fort Lawrence and Vistula under a city charter 1836.—Pop. (1880) 50,137; (1890) 82,652.

TOLEDO, *tō-lē'dō*, Sp. *tō-lā'thō*: famous city of Spain, cap. of the province of T., and long the cap. of Spain; on the n. bank of the Tagus, by which it is encompassed on three sides; 55 m. s.s.w. of Madrid by railway; on a number of hills, about 2,400 ft. above sea-level. The climate, excessively hot in summer, is bitterly cold in winter. The Tagus is the great fortress of the town. Rushing round it, on the e., s., and w., between high and rocky banks, it leaves only one approach on the land-side, which is defended by an inner and an outer wall, the former built by the Gothic king Wamba in the 7th c., the latter by Alfonso VI. 1109—both remarkable for the number and beauty of their towers and gates. Seen from a distance, the city has an imposing appearance; within, it is gloomy, silent, inert; and its narrow streets are irregular, ill paved and steep. In the midst rises the lofty, massive cathedral, surrounded by numerous churches and convents, mostly deserted, for here the churches are without congregations, and the streets and walks are almost without people. The cathedral, completed 1492, on the site of a former mosque, is a large edifice in simple, pointed Gothic. It was plundered 1521 and 1808, but previously its interior was most magnificent. The stained glass that remains is superb; the choir is a museum of high-class sculpture; and there are two pulpits of metal, gilt, whose workmanship is as fine as that of the richest plate. The cathedral is 404 ft. long, 204 ft. wide; and is divided by 84 pillars into 5 naves. Connected with the cathedral are an extraordinary number of chapels, of great interest, alike from their architectural beauty, their decorations, and their historical associations. The Zocodover, 'square market,' thoroughly Moorish in its architecture, is a fashionable promenade, and was for years the site on which heretics were burned and bull-fights took place. The *Fabrica de Armas*, or manufactory of Toledan swords, a huge, rectangular, unsightly building on the right bank of the Tagus, was erected 1788, though long before that time the Toledan blades had become famous; and the fondness of the Iberians for their weapons, as well as the weapons themselves, was the theme of Livy and Polybius. The temper of the best Toledan blades is such 'that they are sometimes packed up in boxes, curled up like the mainspring of a watch.' The buildings of the town include a theol. seminary, milit. school, female college, hospitals, and manufactories of coarse woollens, paper, guitar-strings, and leather.

T., the *Toletum* of the Romans, was of very early origin and was taken by Marius Fulvius B.C. 193. It was cap. of the Goths during their dominion; 714–1085 it was in the possession of the Moors, and then was permanently annexed to the crown of Castile. In its highest prosperity it is said to have had 200,000 inhabitants.—Pop. about 20,837.

TOLENTINO—TOLERANT.

TOLENTINO, *tō-lěn-tě'nō* (*Tolentinum*): city of central Italy, province of Macerata; 11 m. s. of Macerata, on the left bank of the Chienti. It has a fine cathedral dedicated to St. Nicholas, and a town-hall with ancient inscriptions, a statue of Agrippina, and several good paintings. T. has been a bishop's see from the 5th c. In the Parisani Palace at T., Pius VI. signed a treaty with Bonaparte, in 1797, by which the pope ceded Bologna, Ferrara, and the Romagna to the Cisalpine Republic. Here Murat was defeated by the Austrians (1815).—Pop. 5,000.

TOLERABLE, a. *tōl'ěr-ă-bl* [F. *tolérable*—from L. *tolerab'ilis*, that may be endured—from *tolērō*, I bear, I endure]: that may be borne or endured; supportable; moderately good or agreeable; not very excellent or pleasing; passable. **TOL'ERABLY**, ad. *-blī*, in a manner that may be endured; passably. **TOL'ERABLENESS**, n. *-bl-nēs*, the state of being tolerable. **TOL'ERANT**, a. *-ănt* [F. *tolérant*—from L. *tolērans* or *tolēran'tem*, tolerating]: enduring; suffering to be, or to be done; indulgent. **TOL'ERANTLY**, ad. *-lī*. **TOL'ERANCE**, n. *-ăns* [F.—L.]: patience and indulgence toward those whose opinions or practices differ from our own: in *minting*, the amount of deviation in fineness and weight permitted by law in gold and silver coins; permissible departure from the standard fineness and weight of coins (see **MINT**). **TOL'ERATE**, v. *-ăt* [L. *tolērātus*, tolerated]: to suffer to be; to permit or allow without positive hindrance. **TOL'ERATING**, imp. **TOL'ERATED**, pp. suffered; not prohibited. **TOL'ERA'TION**, n. *-ă'shūn*, the allowance of that which is not wholly approved; the permission of religious opinions and modes of worship different from those of the established church. **TOLERATION ACT**, an act of the parliament of England, passed 1689, May 24, relieving dissenters, except Rom. Catholics and Unitarians, from certain penalties; complete toleration was granted by act, 1829, Apr. 13.

TOLERANT, TOLERATE: see under **TOLERABLE**.

TOLERATION.

TOLERA'TION, RELIGIOUS: measure of liberty which, in some countries where a particular form of religion is established by law, is allowed to nonconformists publicly to teach and defend their theological and ecclesiastical opinions, and to worship whom and as they please, or not at all: however, no permission is given to violate the rights of others, or to infringe laws designed for protection of decency, morality, and good order, or for the security of the governing power, inasmuch as the enforcement of those laws which have merely civil and political objects in view is indispensable to the public welfare, and must proceed without regard to any citizen's notions of religious duty. In Britain, and by colonial inheritance of English law in some of the states of the American Union, there still remain some statutes imposing penalties on opinions and practices generally regarded as impious and classed as crimes because of their offensiveness to God (see **BLASPHEMY: BRAWLING IN CHURCHES**): but these laws are now seldom executed—the opinion having become prevalent, that, except when the religious feelings of the Christian public are so wantonly outraged as to make the perpetrator a nuisance, wrong practice in religion is best overcome by personal moral influence, and that when those accused of Heresy (q.v.) are men of piety and sincere conviction, any degree of severity short of extirpation tends rather to further than to suppress their tenets. Besides, the right of private judgment in matters of faith and worship is now more generally recognized *in practice* than formerly, though even yet multitudes resent the exercise, by their neighbors who differ from them, of the freedom which they claim for themselves—forgetting the principle applied by the apostle Paul to the case of religious differences (Rom. xiv.). The right of private judgment is a lesson that has been slowly learned. The Reformers, who on no other ground could justify their separation from the church of Rome, became in their turn the persecutors, not only of the Romanists, who had persecuted them, but also of such fellow-Protestants as had drawn from Scripture conclusions differing from their own. See **CALVIN: SERVETUS: SOCINUS: BIDDLE: JEWS**. In a church claiming Infallibility (q.v.), and believing that salvation is unattainable beyond her pale, it is not only consistent, but to her most earnest members must seem a duty, to prevent by force the spread of what is accounted a fatal heresy; and, in fact, toleration has not been professed or practiced by the Church of Rome. See **ALBIGENSES: WALDENSES: DOMINICANS: INQUISITION: HUGUENOTS: BARTHOLOMEW'S (ST.) DAY: NANTES, EDICT OF: CEVENNES: DRAGONNADES**. But even the Puritans (q.v.),—at least the Presbyterian section of them—though long oppressed themselves, were so blind to the right of others to differ from them, that in their own brief day of power they repudiated by word and deed, as a monstrous and impious error, the principle which Oliver Cromwell (q.v.), far in advance of his times, earnestly advocated, of a universal toleration in religion. In the Assembly of Divines

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(q.v.) at Westminster 1643-46, the Presbyterian members contended successfully against the proposal of the Independents that all sects should alike be tolerated. 'We hope,' wrote Baillie to his Presbyterian friends in Scotland, 'that God will assist us to remonstrate the wickedness of such a toleration. . . . For this point, both they and we contend *tanquam pro aris et focis*' (Baillie's *Letters*, II. 328, 350; Bannatyne Club ed.: see also the strong expressions of George Gillespie, another member of the assembly, in his *Propositions concerning the Ministry and Government of the Church*, prop. 41 and 42). We accordingly find in the 23d chapter of the *Westminster Confession* an assertion of the duty of the magistrate to promote the true religion, and to restrain and punish heterodoxy—a principle which, soon after the Restoration, was found to work very inconveniently for the Presbyterians themselves, the magistrate being then one who differed from them as to what the true religion was. The Independents of that day, on the other hand, trusting less to ecclesiastical safeguards and more to spiritual forces, set a pattern of religious tolerance which some who claimed to be of their party on this side the Atlantic deemed it unsafe to follow, and which almost the whole Christian world for a century thereafter strongly condemned. Those of the Independents who took refuge in Holland doubtless found their principles of toleration strengthened in that nursery of political liberty in modern Europe. See PILGRIM FATHERS, THE. In the 16th c., Zuinglius and the Hungarian reformer Dudith, disclaimed, by word and action alike, the notion that any Christian man is entitled to assume that the right of private judgment in interpretation of Scripture pertains only to him and his party, and is to be denied to Christians who differ from him. It is chiefly to the many keen discussions in Holland and England in the century which followed the Restoration (aided, no doubt, by that moderation or indifference which characterized the Prot. churches a hundred years ago—by the increasing number and power of the dissenters in England—and by that wider mental culture which enables men not only to see that diversity of mental gifts and acquirements naturally leads to diversity of opinion, but, in Cromwell's language, to 'think it possible that they may be mistaken'), that we must ascribe the tolerant spirit actuating most of the statesmen of England and the United States in the 19th c., and which has recently increased rapidly among the people at large. One indication of this progress is the fact that the term Toleration is not accepted in this country as expressing the attitude proper for the government toward religious systems or organizations. To *tolerate* is to endure, permit, or allow; and the sensitiveness of liberty has become too keen to accept as a permission from any human authority of that which is a natural indefeasible right.

Not only is the *right* of free thought and discussion now generally recognized, but its *necessity* to the well-being of mankind is asserted by eminent thinkers. John Stuart

TOLERATION.

Mill, in his able treatise *On Liberty*, thus sums up the grounds on which the necessity of such freedom is affirmed by him: ‘(1) If any opinion is compelled to silence, that opinion may, for aught we can certainly know, be true. To deny this, is to assume our own infallibility. (2) Though the silenced opinion be an error, it may, and very commonly does, contain a portion of truth; and since the general or prevailing opinion on any subject is rarely or never the whole truth, it is only by the collision of adverse opinions that the remainder of the truth has any chance of being supplied. (3) Even if the received opinion be not only true, but the whole truth—unless it is suffered to be, and actually is, vigorously and earnestly contested, it will, by most of those who receive it, be held in the manner of a prejudice, with little comprehension or feeling of its rational grounds. And not only this, but (4) the meaning of the doctrine itself will be in danger of being lost, or enfeebled, and deprived of its vital effect on the character and conduct: the dogma becoming a mere formal profession, inefficacious for good, but cumbering the ground, and preventing the growth of any real and heart-felt conviction, from reason or personal experience’ (p. 95).

See Jeremy Taylor’s *Liberty of Prophesying*; Milton’s *Areopagitica*, his *Treatise of Civil Power in Ecclesiastical Causes*, and his treatise *Of True Religion, Heresy, Schism, Toleration, etc.*; Dr. John Owen’s *Indulgence and Toleration Considered*; Barclay’s *Apology for the Quakers*, prop. 14; Locke’s *Letters concerning Toleration*, and treatise *On the Conduct of the Understanding*; Bishop Hoadley’s *Sermons*, and *Dedication to Pope Clement XI.*; Ibbot’s *Boyle Lectures on the Right, Duty, Benefits, and Advantages of Private Judgment*; Paley’s *Moral Philosophy*, bk. 6, chap. 10; Sydney Smith’s *Letter to the Electors on the Catholic Question*; Disraeli’s *Curiosities of Literature*, article ‘Toleration;’ Hallam’s *Literature of Europe* (Part III., chap. 2); Whately’s *Essays on the Errors of Romanism, etc.*; J. Blanco White *On Heresy and Orthodoxy*; Brook’s *History of Religious Liberty*; James Martineau’s *Rationale of Religious Enquiry*; Samuel Bailey’s *Essay on the Formation of Opinions*, and *On the Pursuit of Truth*; Tayler’s *Retrospect of the Religious Life of England*; Edgar Taylor’s *Book of Rights, or Constitutional Rights and Parliamentary Proceedings affecting Civil and Religious Liberty in England from Magna Charta to the Present Time*.—As to the manner in which the early Christians became liable to punishment under the Roman laws, see Neander’s *History of the Christian Religion and Church*, I., p. 118, Bohn’s ed.; Gibbon’s *Decline and Fall of the Roman Empire*, chap. 16, compared with chap. 2; Dr. Taylor’s *Elements of Civil Law*, App.: also, in the present work, ANTONINES, MARCUS AURELIUS: DECIUS: PERSECUTIONS.

TOLL—TOLLENS.

TOLL, v. *tōl* [Icel. *tall*, deceitful: W. *twyll*, deceit, illusion: Bret. *touella*, to enchant, to allure: OHG. *tollon*, to stroke: originally meant, 'to incite one to do a thing, to draw, to entice']: to stroke or ring slowly, as a bell to invite the people into church; to sound a bell with slow uniform strokes (especially by striking with a hammer or the like and without swinging) in order to announce a death, or to give solemnity to a funeral; in *OE.*, to draw by degrees; to entice: N. the slow repeated sounding of a bell at short intervals. **TOLL'ING**, imp.: **ADJ.** sounding as a tolled bell: N. the act of one who or that which tolls. **TOLLED**, pp. *tōld*: **ADJ.** rung, as a bell.

TOLL, v. *tōl* [L. *tollo*, I take away]: in *law*, to take away; to vacate; to annul.

TOLL, n. *tōl* [Dut. *tol*; Dan. *told*; Ger. *zoll*; Icel. *tollr*, custom, toll: Gr. *telōnion*, a custom-house—from *telos*, a tax, toll]: duty or tax imposed on travellers or goods passing along a bridge or a public road or the like; tax paid, or duty imposed, for some liberty or privilege, as for permission to erect a stall in a market; payment for passage; a miller's compensation for grinding corn. In general, toll is a payment exacted by express statute, or (in former times) by some prescriptive usage or under a royal grant, e.g., by the owner of a port for goods landed or shipped, by the owner of a market or fair for articles sold, or specifically by those charged with maintenance of roads, streets, bridges, etc., for the passage of persons, goods, or cattle. It is essential in a toll that it be for some reasonable consideration; otherwise, it is void. The first recorded royal commission for a road-toll in England was granted by Edward III. 1346. In modern times the right to take toll is always created by statute, and nothing short of statutory authority will authorize its levy, for it is a species of tax.

Many tolls receive special names, as dues, customs, etc.; and the term toll is now mostly used in connection with turnpike roads (so called from the turnpike, or gate turning on an upright axis or pike, at which the tolls are collected) and bridges. See **HIGHWAY**. Turnpike tolls, formerly much in use in the United States, have, in recent years, been in gradual process of abandonment, and a similar reform has been applied in Great Britain. **TOLL**, v. in *OE.*, to impose a toll on; to exact, as a tax or tribute; to pay toll. **TOLL'ABLE**, a. *-ā-bl*, subject to the payment of toll. **TOLL'AGE**, n. *-āj*, payment of toll; the amount paid. **TOLL-BAR**, a beam or gate across a road at a toll-house to prevent vehicles passing without paying toll. **TOLL-BOOTH**, n. *-bōth*, originally, a booth for the collection of tolls; subsequently a prison—in this sense now spelled **TOL'BOOTH**. **TOLL-GATE**, a gate where toll is taken. **TOLL-GATHERER**, one who collects tolls. **TOLL-HOUSE**, the house where the toll-gatherer resides.—**SYN.** of 'toll, n.': tax; impost; cess; custom; duty; assessment; rate; tribute; charge; levy.

TOLLENS, *tōl'enz*, **HENDRIK**: popular Dutch poet: 1780, Sep. 24—1856, Oct. 21; b. Rotterdam. In his 17th year he began to make French literature his favorite study, and translations of French tragedies his chief work. At 19 he

TOLMEN—TOLSTOI.

published translations from the French poets, *A Nosegay of Fragrant Flowers culled on French Ground*. Three years later appeared his *New Songs and Idyls*. In 1805 appeared his tragedy of *Lucretia*; and 1806 that of the *Hoekschen and Kabeljaauwschen*, or the Contest between the Nobility and the Towns in Holland, in the olden time—both original pieces. Of his series of songs and poems were: 'William I.,' the 'Victory at Nieuwpoort,' the 'Four Days' Naval Fight,' the 'Cry to Arms in 1815,' the 'Wintering of the Dutch in Nova Zembla,' and the 'National Song of the Netherlands.' His patriotism and deep warm feeling are shown in 'The Evening Prayer' and 'The General Prayer-day.' T. published also *Romances, Ballads, and Legends* (1818); *New Poems* (1821-29); *Songs of Claudius* (1832); *Poetical Flowers gathered from Neighboring Nations* (1839); *Scattered Poems* (1840); two vols. (1850). T. ranks among the first of modern Dutch poets. His poems touched the heart of the people. The 'Wintering in Nova Zembla' is a wonderful piece of descriptive poetry. In early life, T. belonged to the Rom. Cath. Church, and 1827 joined the Prot. Remonstrants.

TOLMEN, n. *tōl'měn* or *tōl'měn* [Celt. *dol*, a table; *men*, a stone: F. *dolmen*]: a curious, supposed Druidical monument, consisting of a large stone placed horizontally on other upright stones about three or four feet high; also called a *cromlech*; also spelled **DOLMEN**.

TOLOSA, *tō-lō'sá*: town in n. Spain, cap. of the province of Guipuscoa, 15 m. s. of the seaport of San Sebastian. It is in a deep valley watered by two streams, and has many old family mansions. There is a royal factory for arms, and in the vicinity are zinc and lead mines.—Pop. about 8,000.

TOLSTOI, *tol'stoy*, Count **LYEF** (or **LEO**) **NIKOLAIEVITCH**: novelist and reformer: b. near Tula, Russia, 1828, Aug. 28. He was educated at his mother's estate and at the Univ. of Kazan. He entered the military service 1851 and served in the Caucasus: there he wrote his first works, *The Cossacks* and *Childhood and Youth*. He was on the staff of Prince Gortshakoff at the outbreak of the Crimean war, 1853; commanded a battery at the siege of Sevastopol; and resigned his commission at the return of peace: he details the harrowing incidents of that siege, as observed by himself, in *Sevastopol in Dec., May, and August*. His next work, *War and Peace*, is perhaps the most realistic presentation of the horrors of war found in any literature. In *Anna Karenina* he first gives expression to his discontent with the moral and social conditions in high Russian society. That work was written 1876-7; and to emphasize his condemnation of the existing order of things in Russia, T. renounced the privileges of his status as a nobleman, donned the garb of the *moujik*, and applied himself to learn the trade of a shoemaker, so that he might live on the fruit of his own honest work. His views of the Christian religion found expression in the two works *My Religion* and *Christ's Christianity*, and in many smaller

TOLTECS—TOLU-BALSAM.

tractates. He goes back, as he thinks, to the original spirit of Christianity, and interprets literally the words of Jesus—his promises, his counsels, his commandments—and not in a figurative sense. Thus, like the Friends, he insists on the absolute necessity of non-resistance to evil and wrong. According to T., love of the neighbor is the fulfilling of the whole law of Jesus: creeds are of no account, prayer of no efficacy, the immortality of the soul an open question. Except as to the authority of creeds, it is not evident by what mental process T. reconciles these tenets with the precepts and promises of the Lord Jesus. He acknowledges no authority in any church organization; and in matters of state, he is an anarchist. His hope of betterment for mankind rests on socialism or communism; and herein he believes that he is but following his master, Jesus. His undeniable sincerity, with his vigor of presentation, has at least commanded public attention to some points in Christ's life and teachings commonly overlooked by Christians. Of T.'s works, which are very numerous, many have been translated into French—and of these nearly all into English. Thus there are English versions of *War and Peace*; *Anna Karenina*; *A Russian Proprietor*; *The Long Exile*; *Sevastopol*; *Ivan the Fool*; *Kreutzer Sonata*; etc. T. despises the fame of literature: with him writing is in the strictest sense a means, not at all an end. The 'one thing necessary' is, not culture, not science, not grace of manner, not art, but love of the brotherhood. He publicly announced, 1891, that whatever he has written is common property of all the world, and may be freely translated and published by every one. In the great famine which came upon Russia in the winter 1891-2, T. and every member of his large family busied themselves with organizing relief for the destitute, invoking assistance from their own countrymen and the world, and with their own hands distributing provisions to the destitute.

TOLTECS, *tōl'těks*: cultured race which, coming from the north (according to tradition), was dominant in Mexico from presumably the 7th to the 11th c. To the T. are ascribed the ruined ancient 'cities' and great pyramids of Mexico and Yucatan. These remains prove the T. to have well advanced in architecture and sculpture. Proofs are extant of their proficiency also in the potter's art and in weaving. The numerous hieroglyphic inscriptions on their monuments still remain undeciphered. See John L. Stephens's *Central America, Chiapas, and Yucatan* (2 vols.), and his *Yucatan* (2 vols.); Charnay's *Anc. Cities of the New World*; Nadaillac's *Prehistoric America*; J. D. Baldwin's *Anc. America*.—See **MEXICO**.

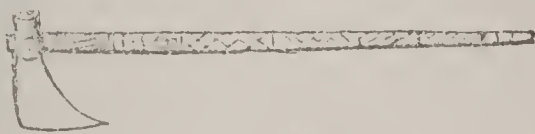
TOLU-BALSAM, n. *tō lō'*- [from *Tolu*, on the n.w. coast of New Granada]: a fragrant oleo-resin, the produce of a South American tree—the *Myrospermum toluiferrum*, ord. *Leguminosæ*, sub-ord. *Papilionacæ* (see **BALSAM**). **TOLUENE**, n. *tōl'ū-ēn*, or **TOLUOL**, n. *tōl'ū-ōl*, a substance allied to benzene, occurring in tolu-balsam, and obtained also from light coal-tar oil.

TOLUCA—TOMATO.

TOLUCA, *tō-lō'ká*, or **TOLOC'CAN**: town of Mexico, cap. of the state of Mexico; 20 m. s.w. of the city of Mexico; about 8,800 ft. above sea-level; near the volcano of T. It is handsomely built; with fine arcades lining the streets. The plain on which it stands is fruitful in maize and other products. Pop. 12,000. Near the town is the volcano of the same name.

TOM, n. *tōm* [probably familiar corruption of *Thomas*]: a male cat; a common prefix of male names, as *tomcat*, *tomfool*.

TOMAHAWK, n. *tōm'ā-hawk* [Ind. *tomehagen*, *tamoi-hecan*, a war-hatchet]: the war-hatchet of the n. Amer. Indians, consisting of a head of horn, or stone, and after the advent of European traders, of iron, fastened to a handle by animal sinews or cords of skin. These hatchets are used in the chase and in battle, not only in close combat, but by being thrown with wonderful skill, so as always to strike the object aimed at with the edge of the



Tomahawk.

instrument. The handles are curiously ornamented. In the figurative language of the Indians, to make peace, is to bury the tomahawk; to make war, is to dig it up. **TOMAHAWK**, v. to kill with the Indian hatchet. **TOM'AHAWKING**, imp. **TOM'AHAWKED**, pp. *-hawk't*.

TOMATO, n. *tō-mā'tō* or *tō-mā'* [Sp., F. *tomate*: of Indian origin], (*Lycopersicum esculentum*): plant and its fruit, of nat. order *Solanaceæ*. The plant (formerly called love-apple), is grown for its fruit, which has a rounded, flattened, often irregular form and bright red or yellow color, and is eaten either raw or cooked, also in sauces and pickles. The fruit is extensively canned. The T. is a native of S. America, but is grown in nearly all the temperate and tropical regions of the world. In 1596 it was introduced into England as an ornamental and medicinal plant. It was little used in the United States previous to 1840, but is now largely grown near great cities in gardens, and in some sections is a prominent farm-crop. For an early crop, seed should be sown in a hot-bed sufficiently early to have the plants of the right size to set as soon as the ground becomes dry and warm in spring and danger of frost is passed—the time varying with the latitude in which the crop is to be grown. Near large cities, plants are grown sometimes from cuttings, placed in a greenhouse, and forced so as to produce a crop in the winter. The main crop is grown in open land. A soil of ordinary fertility is preferable, but manure in moderate quantity should be used in the hill. Plants should be set in rows 3 to 4 ft. apart each way, according to the habit of growth of the varieties, and frequent cultivation and hoeing should be given. In gardens the plants, which grow 2 to 4 ft. high, are sometimes tied to stakes. This is an advantage in ripening the fruit, but is too expensive for field-crops. The principal

TOMB.

enemies of the crop are the stalk-borer, which attacks the vines, and the green worm, which feeds on the leaves. These vermin should be promptly destroyed. The leading diseases are a form of blight affecting the vines, and the rot which sometimes destroys large quantities of fruit. As a preventive the crop should not be grown for two years in succession on the same land. In field-cultivation about 400 bushels per acre is a fair crop. The seed of 87 varieties was offered for sale 1890 by dealers in the United States. These kinds vary greatly in the color, form, and size of fruit, in their foliage, and in the time of ripening. The canning industry has reached large proportions. Reports for 1890 give the number of cases packed as 3,166,177. A very large proportion of the fruit thus packed was grown in Md., N. J., and Delaware.

TOMB, n. *tóm* [F. *tombe*, a tomb—from mid. L. *tumba*, a tomb—from Gr. *tumbos*, a mound of earth raised over a dead body, a tomb: It *tomba*; Sp. *tumba*, a tomb]: a grave; a house or vault in which to deposit the dead; a sepulchre; a monument erected over a grave to preserve the memory of the dead buried there (see below). **TOMBED**, a. *tómd*, deposited in a tomb. **TOMB'LESS**, a. *-lēs*, without a grave or a sepulchral monument. **TOMB'STONE**, n. a stone with an inscription placed over a grave in memory of the deceased.—A *Tomb* is a receptacle for the dead—an excavation in rock or earth, or a vault or chamber either under ground or partly or entirely above ground, to contain the body. It is frequently in the form of a monument over a grave. In early ages, and among eastern nations, it was sometimes the practice to place the remains of the dead in excavated sepulchres, whose interior was often decorated with painting or otherwise. Where the usage was to burn the dead, their bones and ashes were placed in urns in these receptacles. Some of the most remarkable rock tombs were those of Egypt, belonging to the 18th and following dynasty of the Theban kings. The monarch's burial-place began to be excavated as soon as he ascended the throne, and the excavation went on year by year, the painting and decoration progressing till the king's death, when it was suddenly broken off, the tomb thus becoming an index both of the king's magnificence and of the length of his reign. The most costly articles are often found in these sepulchres. The decoration was mostly reserved for their interiors, the façades being comparatively unobtrusive. On the other hand, the rock-tombs of Persia and Lycia, less rich and elaborate internally, have imposing architectural façades, those of the Persian kings being copied from their palaces; and during the Roman period, this species of magnificence prevailed at Petra (q.v.) to an extent that gives that now deserted valley the aspect of a city of the dead: see also **ETRURIA**.

Tombs, in more modern times, have generally been mounds or masses of building over the remains of the dead. In the Homeric poems, heaps or cairns of stones are placed as honorary memorials above the graves of departed heroes. The Sepulchral Mound (q.v.) or tumulus of rude ages is

found over the greater part of n. Europe, and is probably older than the subterranean tomb. The Pyramids (q.v.) were the sepulchres of the Egyptian monarchs from the 4th to the 12th dynasty. The tombs of Greece, and still more those of the Greek colonies in Asia Minor, were sometimes pillars, or upright stone tablets, sometimes small buildings in the form of temples: the most celebrated was the *Mausoleum* (q.v.). The Roman tombs were frequently important architectural structures, varying in form, but oftenest consisting of a circular tower resting on a square basement; familiar examples being the tomb of Cæcilia Metella; and the larger and more solid tomb of Hadrian, on the banks of the Tiber, best known as the Castel St. Angelo, about 220 ft. in height, and of immense solidity. In Rome, Latium, and Magna Græcia, tombs were generally outside the towns, and along the principal roads leading into the country, as in the Via Appia at Rome, and the Street of Tombs at Pompeii. A form of excavated tomb, without external architecture, called *Columbarium* (q.v.), also was in use in Rome, whose walls were pierced with cells to receive cinerary urns. The prevalent circular tomb became in the later Roman empire polygonal; and the central chamber, at first small, was gradually increased, till in the age of Constantine, it became a miniature representation of the Pantheon, generally with a crypt below the principal apartment.

In the earlier centuries of Christianity the burial of the dead in churches was prohibited. The custom first arose of erecting churches over the graves of martyrs; then followed the permission to kings and emperors to be buried in the church porch. The most important tombs of the middle ages are generally within churches or cloisters. There is much variety in form and enrichment of mediæval tombs. The earlier examples consist of a simple stone coffin or sarcophagus, often with a low gabled lid and a sculptured cross. An altar-tomb, or tomb in the form of a table, followed; and in the 13th c., a species of tomb was introduced, consisting of a sarcophagus, on which rests a recumbent figure of the deceased, the whole surmounted by a canopy often of exquisite symmetry and richness. In the renaissance period of art, the tombs became more and more complex. The sarcophagus was disguised, or made the least important part of the monument; the representation of the deceased was confined to a medallion likeness, and the most prominent part of the tomb was of sculptured upholstery, and groups of symbolical and eventually mythological figures. In some of the 16th c. examples, e.g., Michelangelo's tombs of Giuliano and Lorenzo de' Medici, at Florence, the inappropriateness of the design is partly redeemed by the beauty of the figures; but in the succeeding centuries, the vicious taste of these monuments rapidly increased, till it culminated in some of the hideous tombs that disfigure Westminster Abbey and St. Paul's.

TOMBAC—TOMFOOL.

TOMBAC, n. *tŏm'băk* [Mal. *tambaga*, copper]: alloy of copper and zinc; brass with an excess of zinc. **WHITE TOMBAC**, or **WHITE COPPER**, alloy of about 75 parts of copper and 25 parts of arsenic, forming a very beautiful metal used in the manufacture of buttons.

TOMBIGBEE, *tŏm-bĭg'bē*, **RIVER**: affluent of the Mobile river, in Ala.; rising in Tishomingo co., Miss., a little w. of the interstate line, and flowing generally s.e. through four cos. of Miss., entering Pickens co., Ala., at lat. 33° 15', and joining the Alabama about 45 m. above the head of Mobile Bay; length about 450 m. It is navigable as far as Aberdeen, Miss.

TOMBOLA, *tŏm'bō-la* [F.—from It. *tombola*, a kind of lottery]: kind of lottery; a party or 'fair' at which fancy articles are offered as prizes, each purchaser of a ticket being entitled to a prize if he draws all the numbers on that ticket.

TOMBOOC'TO: see **TIMBUKTU**.

TOMBOY, n. *tŏn'boy* [*Tom*, and *boy*]: a rude or wild, romping girl; a hoiden; in *OE.*, a harlot.

TOMBSTONE, *tŏm'stŏn*: city, cap. of Cochise co., Ariz.; 9 m. n.e. of the San Pedro river, 20 m. n.w. of the Mexican boundary, 25 m. s.e. of Florence. It is on the declivity of low hills which separate it from the river, and in a dry valley that gradually rises to the base of the Dragoon Mountains 12 m. distant n.e. The city contains co. court-house (built 1882), municipal building, hotel, large public hall, several churches and public schools, substantial business blocks, system of water-works 20 m. long that cost \$500,000, 1 state bank (cap. \$50,000), and 1 daily and 1 weekly newspaper. The low hills in **T.** contain the richest gold and silver mines in Ariz.; and historical interest is claimed for the region in that it was passed by the surviving members of De Soto's little army on its way to Mexico, was visited by Humboldt, and was the scene of early silver-mining by the Spaniards.—Pop. (1889) 973; (1890) 1,875; (1900) 646.

TOMCAT, n. *tŏm'kăt* [from *Tom*, the familiar abbreviation of Thomas, and *cat*]: a full-grown male cat.

TOME, n. *tŏm* [F. *tome*, a volume—from L. *tŏmus*, a piece, in mid. L. a book—from Gr. *tomŏs*, a piece cut off, part of a book—from *temnein*, to cut]: a book; one volume of several constituting the same work; generally, any large book.

TOMENTOSE, a. *tŏ'mĕn-tŏs'*, or **TOMENTOUS**, a. *tŏ-mĕn'-tŭs* [L. *tomen'tum*, a stuffing for cushions: F. *tomenteur*; Sp. *tomentoso*]: in *bot.*, covered with hairs so close as scarcely to be discernible; having a whitish down-like wool; nappy. **TOMEN'TUM**, n. *-tŭm*, in *bot.*, the closely matted hair or downy nap covering the leaves or stems of some plants; in *anat.*, minutely divided vessels on the surface of the brain.

TOMFOOL, n. *tŏm'fŏl* [*Tom*, the familiar abbreviation of Thomas, and *fool*]: a great fool; a silly trifler. **TOMFOOL'ERY**, n. *-ĕr-ĭ*, foolish or senseless trifling; trifles. **TOMFOOL'ISH**, a. *-ĭsh*, nonsensical; idiotic; trifling.

TOMIN—TOMSK.

TOMIN, n. *tō'mīn* [etym. doubt.]: jeweller's weight of 10 grains.

TOMIPAROUS, a. *tō-mīp'ă-rūs* [Gr. *tomē*, a cutting: L. *pārīō*, I bring forth]: in *bot.*, producing spores by division.

TOMMY, n. *tōm'mī*: in *Brit. slang*, bread; provisions; specifically, provisions or other goods supplied to a workman from a tommy-shop; truck (see **TRUCK-SYSTEM**). **TOMMY-SHOP**, a store owned or controlled by an employer, from which his employés are compelled or expected to draw their supplies of provisions, etc., orders on this store being given them instead of money in payment of their wages. **TOMMY MASTER**, a master who pays his workmen's wages more or less in goods.

TOM-NODDY, n. *tōm'nōd-dī*: same as **NODDY** (q.v.).

TO-MORROW, n. ad. *tū-mōr'rō* [*to*, on, and *morrow*]: the day after the present.

TOM'PION, n.: the iron bottom of a charge of grape-shot; in *lithograph.*, the inking-pad of the lithographic printer. See under **TAMP**.

TOMPKINS, *tōmp'kīnz*, DANIEL D.: vice-pres. United States: 1774, June 21—1825, June 11; b. Scarsdale, N. Y. He graduated at Columbia Coll. 1795, began practice of law 1797; elected to N. Y. constitutional convention and to the state assembly 1801. He was elected to congress 1804, but before taking his seat resigned his office to become a judge of the N. Y. supreme court. He was elected gov. of the state by the democratic wing of the (old) republican party 1807, and was re-elected 1809, 11, 13, and 17 by the united (old) republican party. During his governorship he zealously sustained the policy of Pres. Jefferson, and strongly opposed the establishment in New York of the Bank of N. America. In the war with Great Britain he strengthened with his personal and official credit the financial standing of the U. S. treasury, and advanced money from his own means to purchase war material and to organize troops. In a message to the legislature 1817 he recommended the abolition of slavery in N. Y.; and an act was passed accordingly, which went into effect 1827, July 4. He was elected vice-pres. of the United States 1816, and re-elected 1820—the two terms of Pres. Monroe.

TOMSK, *tōmsk*: government in w. Siberia, bounded e. and n.e. by the govt. of Enisei or Yeneseisk, n.w. and w. by the govt. of Tobolsk; 331,159 sq. m. T., more than any other govt. in Siberia, abounds in lakes and rivers. Of the rivers, mostly flowing n. from the foot of the Altai Mts., the principal are the Ob, Tom, Chulim, and Irtysh. The largest lakes, which are both sweet and brackish, are in the Barabinsky Steppes. The surface is greatly diversified: the Altai Mountains, with summits 10,000 to 11,000 ft. high, with lateral and parallel ranges, give an Alpine character to a great region. Elsewhere are elevated plateaus (3,000 to 4,000 ft.), and extensive lowlands. The climate is mild in the middle and s. districts, but severe in the north. Sandy and clayey soils prevail; but there are

TOMSK—TONAWANDA.

patches of good mold on which abundant crops of grain of various kinds, as well as hemp, flax, and tobacco, are raised. The extensive mountain-slopes and plains are covered with luxuriant forests, in which the most common trees are the broad-leaved oak, the cedar, and the pitch-tree. The natural products are numerous. In the s. and e. parts, droves of wild horses and herds of horned cattle are a source of considerable wealth. But the mineral products of the country are its chief source of riches. Manufactures are not extensive; there is a large barter-trade with China, and the commerce of the country is maintained mostly by fairs. Pop. (1889) 1,299,729.

TOMSK: trading-town of Siberia, cap. of the govt. of T., on the Tom, tributary of the Ob, 2,809 m. e. of St. Petersburg, 2,377 m. from Moscow; lat. $56^{\circ} 30'$ n., long. $84^{\circ} 58'$ e. Situated on the great trading highway of Siberia, it is the seat of important transit-trade, chiefly with the Kalmucks and Mongols; but the goods that pass to and from Irkutsk also go by way of this town. There are more than 50 manufactories, chiefly for soap, leather, and distilled liquors, and the most important commercial article is furs. It is said to be the richest town in Siberia; and its commercial importance, its extent, and the number of its handsome buildings, are increasing annually. A great university is being instituted.—Pop. (1888) 36,742.

TOM THUMB: see STRATTON, CHARLES SHERWOOD.

TOMTIT, n. *tŏm-tit'* [*Tom*, abbreviation of Thomas, and *tit* (see **TIT**)]: a very little bird; the blue Tit (q.v.).

TOM-TOM, n. *tŏm'-tŏm'*: see **TAM-TAM**.

TON, n. *tŭn* [**AS.** *tunne*, a barrel: mid. L. *tunna*—from L. *tīna*, a wine-vessel]: a weight of 20 cwt., equal to 2,240 lbs., called the *long ton* (the hundred-weight being reckoned at 112 lbs., as is customary in the United Kingdom), or equal to 2,000 lbs., called the *short ton* (the cwt. being reckoned at 100 lbs., as is customary in the United States): the *measurement ton* equals 40 cubic ft. **TON'NAGE**, n. *-nāj*, the carrying capacity of a ship, reckoned in tons of 100 cubic ft. (see **TONNAGE**, below): a duty or toll on vessels, or on goods carried on water; the shipping of any port or country regarded collectively.

TON, n. *tŏng* [**F.** *ton*, tone]: the prevailing fashion; high mode.

TON: common termination of place-names; a shortened form of *town*, from Middle English *-toun*, Anglo-Saxon *tun*; as *Castleton*, *Charleston*. A *tun* or *ton* was a place surrounded by a hedge, or rudely fortified by a palisade. Originally, it meant only a single homestead or farm, and this use is still common in Scotland. Similarly, the terminations *worth*, *fold*, *garth*, *burgh*, and others also convey the notion of inclosure, protection.—See I. Taylor's *Words and Places*.

TONAWANDA, *tŏn-a-wŏn'da*: village in Erie and Niagara cos., N. Y.; on Niagara river and the Erie canal, and on the Erie and the New York Central and Hudson River railroads; 11 m. n. of Buffalo, 11 m. s.e. of Niagara

Falls. It is the second lumber market in the United States, receiving yearly 700,000,000 ft.; and manufacturing 50,000,000 ft. of round timber; has an excellent harbor with 10 m. of wharves; and is watered by Tonawanda creek, at whose mouth it stands. The village contains public schools, a national bank (cap. \$100,000), state bank, 1 weekly newspaper; natural and manufactured gas and electric-light plants. Holly system of water-works with 20 m. of pipe, sewerage system with 15 m. flow; also several foundries and flour-mills, iron and steel works, and large beer brewery. The lumber industry has 13 planing, 7 shingle, and 3 saw mills. Pop. (1880) T. 3,864, N. T. 1,492 = 5,356; (1890) T. 7,145, N. T. 4,793 = 11,938; (1900) 7,421.

STONE, n. *tōn* [F. *ton*, tone—from L. *tonus*, a tone—from Gr. *tōnos*, a stretching, a tone or note of the voice—from *teinō*, I stretch]: sound considered in regard to its pitch, quality, or volume; a musical sound as opposed to *noise*; a particular inflection of the voice as modified by the feelings or passions; the particular sound or accent of the voice in speaking or reading; the state of the body in regard to the healthy performance of its animal functions; state of mind; character; tenor: in *paint.*, the harmony of the colors of a picture in light and shade: in *music*, an interval of sound; one of the larger intervals in the diatonic scale, so called in distinction from the *Semitones* (q.v.), or smaller intervals. Theoretically, some of the intervals called tones are larger than others, and none of them are equal to two semitones: thus, in the scale of C, the intervals CD, FG, and AB all are equal; but DE and GA, also called tones, are smaller; and the semitones, EF and BC, are larger than half even of the larger tones. In instruments, however, which are tuned according to the equal temperament (see **TEMPERAMENT**), all the tones are made equal, and each equivalent to two semitones. **STONE**, v. to utter in an affected tone; to tune. **TON'-ING**, imp. **TONED**, pp. *tōnd*: **ADJ.** having a tone. **TONAL**, a. *tōn'āl*. of or pertaining to tone. **TONALITY**, n. *tōn-āl'i-tī*, the peculiarity possessed by music in consequence of its being written in definite keys, conforming to certain defined tones and semitones of the diatonic scale. **STONE'LESS**, a. -*lēś*, without tone; unmusical. **STONE-SYLLABLE**, an accented syllable. **TONIC**, a. *tōn'ik*, increasing tension; giving or increasing strength; imparting vigor to the bodily system; strengthening (see **TONICS**): pertaining to tones or sounds: in *music*, denoting the key-note: N. a medicine or agent which imparts vigor and strength to the body; a stomachic: in *music*, the key note or fundamental sound which generates all the rest (see **KEY**). **TONICITY**, n. *tōn-īs'i-tī*, a state of healthy tension of muscular fibres while at rest (see **TONICITY**, **MUSCULAR**). **TONOMETER**, n. *tō-nōm'ē-tēr* [Gr. *tonos*, stretching, a tone; *metron*, a measure]: delicate apparatus for tuning musical instruments and for ascertaining the exact number of vibrations per second which produce a given tone. **TONOM'ETRY**, n. -*trī*, process of measuring vibrations of tones by means of a tonometer. **TONING DOWN**, subduing in color or shade; softening so as to remove all harshness.

TONE—TONGS.

TONE, *tôn*, THEOBALD WOLFE: Irish patriot; 1763, June 20—1798, June 20; b. Dublin. Having graduated at Trinity Coll., he was called to the bar 1789. He espoused the cause of the Rom. Catholics, and 1791 issued an appeal to Presb. Irishmen for justice to their Rom. Cath. fellow-citizens. The same year he founded the first club of United Irishmen at Belfast, all of whose members were Protestants; similar clubs were organized by him throughout the north. Though himself a Protestant, he was elected sec. and agent of the Rom. Cath. committee 1792. Having become implicated in a revolutionary conspiracy, he was permitted to leave Ireland, and came to the United States 1795, but soon sailed for France to enlist aid from the French directory for an insurrection in Ireland. In France T. held intimate relations with the highest men of the state; was commissioned *chef de brigade*, and was adjt. gen. to Gen. Hoche in the ill-starred expedition to Bantry Bay, 1796. Returning to France, he again accompanied a feeble expedition to Ireland. T. was taken prisoner after heroic resistance, and sentenced to death by court-martial at Dublin 1798; but he cut his throat in prison Nov. 11, the eve of the day set for his execution. His *Life*, written by himself, with a collection of his political writings, was pub. in Washington 1826.

TONGA BAY, *tõng'ga*: small inlet on the e. coast of Africa, bounded n. by Cape Delgado.

TON'GA ISLANDS AND TONGATABU, *tõng-a-tâ'bô*: see FRIENDLY ISLANDS.

'TONG-KING', or **TUNG-KING'**: see **TONQUIN: COCHIN CHINA**.

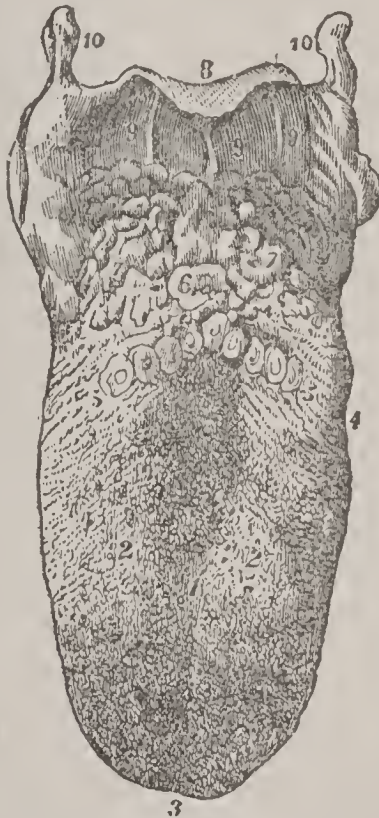
TONGRES, *tõngr*: very ancient city of Belgium, province of Limbourg. Its church of Notre Dame dates from 1240, and the cloister from the 10th c. There is a mineral spring in the vicinity, mentioned by Pliny.—Pop. 7,200.

TONGS, n. plu. *tõngz* [Icel. *tõng*; Dan. *tang*; Dut. *tang*; Ger. *zange*, tongs: Icel. *tangi*, the tang or part of a knife inclosed in the handle]: an instr. of metal, consisting of two long legs jointed at one end, for grasping and holding anything: the three chief forms are: (1) fire-tongs, hinged or pivoted like scissors near the upper end; (2) blacksmiths'-tongs, hinged or pivoted near the lower end; and (3) sugar-tongs, in which the two legs are joined together at the top by a spring.

TONGUE.

TONGUE, n. *tǔng* [Icel. and Sw. *tunga*; Dut. *tong*; Ger. *zunge*; Gael. *teanga*; L. *lingua*, a tongue]: the chief instr. of speech, and the organ of taste (see below); speech; discourse; power of speech; voice; a language; anything resembling a tongue in its shape, use, or situation, as the *tongue* of a buckle or balance; a narrow piece of land projecting into the sea; the projection on the end or side of a board which fits into a groove; the clapper of a bell: V. to chide; to scold; to talk or prate much; in *music*, to modify notes with the tongue, as in flute-playing. **TONGU'ING**, imp. *-ing*. **TONGUED**, pp. *tǔngd*: **ADJ.** having a tongue. **TONGUELESS**, a. *-lēs*, speechless; in *OE.*, unnamed; not spoken of. **TONGUE-SHAPED**, a. in the form of a tongue. **TONGUE-TIED**, a. having an impediment of speech arising from some defect in the tongue; unable to speak freely from whatever cause. **TO HOLD THE TONGUE**, to be silent.

TONGUE, THE: symmetrical muscular organ, extending from the hyoid bone backward and downward, to the lips in front, and occupying the buccal cavity. The superior surface, borders, and anterior third of the inferior surface, are free; while the remaining parts are attached to adjacent



The upper surface of the Tongue, showing the Papillæ:

1, the raphe or mesial line; 2, 2, the lateral parts; 3, the tip; 4, 4, the sides or edges; 5, 5, the V-shaped mass of circumvallate papillæ; 6, the foramen cœcum; 7, the mucous glands at the root of the tongue; 8, the epiglottis; 9, 9, 9, the fræna epiglottides; 10, 10, the greater horns of the hyoid bone.—From Sæmmering.

parts by the investing mucous membrane and subjacent structures. At certain points, this membrane, on leaving the tongue, forms distinct folds, containing fibrous or muscular tissue, which act to a certain extent as ligaments to the tongue. The most considerable of these folds is

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termed the *frænum* (or bridle) of the tongue, and connects its anterior free extremity with the lower jaw. It acts as a strong ligament, and limits the backward movement of the tip of the tongue. In rare cases, this ligament extends abnormally to the tip, so as to interfere with speech and mastication, and the child is said to be *tongue-tied*; recourse must be then had to division of the *frænum*, popularly known as *cutting the tongue*. Other folds of mucous membrane (the *glosso-epiglottid* folds) pass from the base of the tongue to the epiglottis; while from the sides of the base, passing to the soft palate, are two folds on either side, known as the *pillars of the fauces*: see PALATE. The *superior surface* of the T. is divided into two symmetrical lateral parts by a median longitudinal furrow, beginning at the tip, and extending back about two-thirds of the tongue's length. For the various kinds of papillæ on their surface, see TASTE. At the back of the surface, just behind the circumvallate papillæ, are large mucous glands, extending into long and capacious canals, and helping to secrete the fluid that moistens the T. On the *inferior surface*, the longitudinal furrow, which extends from the tip to the *frænum*, is deeper than on the upper surface; on each side of it, veins are seen running forward; and immediately beneath the tip is a cluster of mucous glands, known as the glands of Nuck (their discoverer, 1690). The *posterior extremity*, or base, is flattened and extended laterally before it is inserted into the *hyoid bone* (known also as the *lingual* or *tongue bone*), which, with certain ligaments, must be regarded as the basis or framework of the T. The muscles of the T. are usually divided into two groups—viz., the *extrinsic* muscles, which attach the T. to certain fixed points external to it, and move it on them; and the *intrinsic* muscles, which pass from one part of the T. to another, constitute its chief bulk, and move it on itself. These intrinsic muscular fibres run vertically, transversely, and longitudinally, and are so interlaced as mutually to support one another, and to act with the greatest advantage. By action of the various muscles, the upper surface of the T. may be made concave or convex, or may be pressed against the roof of the mouth; the tip may be protruded straight out or laterally, upward and downward, and to any recess (e.g., a hollow tooth) within the mouth where food might lodge; and the whole organ may be drawn back. The organ is freely supplied with blood, mainly by the lingual artery given off by the external carotid. Of the nerves, the glosso-pharyngeal and certain branches of the third division of the fifth nerve are concerned in the special sense of Taste (q.v.); other branches of the fifth nerve are concerned in ordinary sensation, while the hypoglossal nerve on each side is the motor nerve of the tongue.

The various uses or functions of the T. cannot be understood without brief reference to its comparative anatomy. The T. in mammals does not differ materially from that of man; but in general there is close coincidence in size and form between this organ and the lower jaw. In the

TONGUE.

rodents, the T. has a wedge-like shape. In the giraffe and the ant-eater, the T. is much prolonged, being an important prehensile organ in the former; while in the latter, it is driven into ant-hills, and the victims are secured by its viscid secretion. In the feline races, the conical papillæ are converted into recurved spines of great size and strength, which the animal uses in scraping bones and in combing its fur. Except in mammals, the T. is probably not an organ of taste. For a good description of the T. in birds, reptiles, and fishes, see Prof. Owen's *Anatomy of the Vertebrates*, I., II. Among the Mollusca, the Gasteropoda are provided with a very singular apparatus known as the T., consisting generally of a thin membrane, long and narrow, and rolled, except at its anterior extremity, into a tube. This membrane is covered on its upper surface with transverse rows of minute teeth, or more commonly with plates having tooth-like siliceous projections. These teeth present a great variety of patterns, which are constant in the different genera, and even characterize the species. Two eminent naturalists have independently made the teeth of the Mollusca a basis of classification. The Articulata do not present anything like a true T., though in insects a certain oval appendage is described as a *lingua*.

The functions of the T. are gustation, prehension (in man and monkeys this function is supplied by the hand), mastication, insalivation, deglutition, and speech; to which may be added, spitting and whistling, and in the case of the Gasteropoda, the trituration of the food.

Among *Diseases* of the T. is INFLAMMATION or GLOS-SITIS: the most marked characteristics of this affection are great swelling, tenderness, and difficulty in speaking and swallowing. It rarely occurs as an idiopathic or spontaneous affection, but often accompanies severe salivation. It must be treated by purgatives and low diet, and by gargling, as in ordinary Salivation (q.v). Incisions are sometimes useful, both to relieve tension, and by the depletion that ensues. Cases sometimes occur in which the T. suddenly enlarges to immense size, so as almost to cause suffocation, without any true sign of inflammation.

Hypertrophy, or *persistent enlargement* of the T., sometimes results from an imperfectly cured case of inflammation; but is probably in most cases congenital, though perhaps not noticed for a year or two. Bertholin (*Hist. Centur.* III. 85) mentions the case of a male child born with the T. protruding out of the mouth as large as a filbert; and as the child grew, the T. increased to the size of a calf's heart. One of the most common forms of disease of the T. is *ulceration*, which may arise (1) from irritation by a decayed tooth with a sharp jagged edge; or (2) from constitutional syphilis; or (3) from disordered condition of the digestive organs. In the first case, the tooth must be removed; in the second, iodide of potassium with sarsaparilla should be tried; and in the third, the complaint generally yields to regulation of the diet and of the digestive organs, and sedatives at bedtime. *Cancer* of the T. occurs either in the hard or in the epithelial variety.

TONGUES.

There is a popular belief that this terrible disease may be excited by the irritation caused by a broken tooth, or by smoking a clay pipe; but on comparing the prodigious numbers of jagged teeth and of clay pipes with the rare cases of cancer of the T., we must reject this hypothesis. All that such sources of irritation can effect is to determine the exact seat of development of cancer in persons predisposed to it. A typical case of epithelial cancer of the T. occurred in the person of Prof. Reid of St. Andrews, eminent physiologist. 1847, Dec., his age being 39, and his health good, he noticed a small ulcer on the right side of the T.; it slowly extended, and acquired hard everted edges, but caused little inconvenience. In 1848, July, it had attained a large size; its surface and edges were ragged, and it caused considerable pain, especially at night. A hard ridge could be felt all round the ulcer, and the glands beneath the jaw became enlarged. The health by the end of Aug. had completely given way from the pain, when the diseased part of the tongue was removed by Sir William Fergusson. In less than a month, the wound had healed, and the health was re-established. In Nov. the enlarged glands were removed; but the disease returned in their scars, and spread till it caused death 1849, July. The only treatment which can be adopted with any chance of success is full and early extirpation. Prof. Syme succeeded in removing the whole organ, without even—strange to say—much affecting the patient's speech or power of deglutition. *Tongue-tie* is an affection for which infants are often brought to the surgeon, and which is often operated on needlessly. The division of the *frænum* with a blunt-pointed pair of scissors, with their point directed downward, is very easily performed, and does no harm to the child. Children who do not speak so soon or so clearly as is expected by their mothers, are often supposed to have tongue-tie.

TONGUES, GIFT OF: a peculiar power given to the apostles and other Christians in the first ages of the church. The main passages in the New Test. relating to it are Acts ii. 3-21; I Cor. xii. 10, 28; xiii. 1, and particularly xiv. Allusions to it are in Mark xvi. 17; Acts x. 46; xix. 6. The only allusion to the possession of the gift in later times is in Irenæus, *Adv. Hær.* vi. 6: 'We have many brethren in the church having prophetic gifts, and by the Spirit speaking in all kinds of languages.' From these data, the following conclusions have been drawn by one of the most scholarly and intelligent expositors of the Epistles to the Corinthians. The gift in question is represented as something entirely new in the apostolical age: 'They shall speak with new tongues'—Mark xvi. 17. The effect on the spectators at the day of Pentecost is of universal astonishment. It is represented as a special mark of conversion, immediately preceding or following baptism. It is a gift 'of the Spirit:' 'They began to speak with other tongues, as the Spirit gave them utterance'—Acts ii. 4. It was, moreover, closely connected with the gift of 'prophesying'—I Cor. xii. 10, 28; xiv. 1-6. It

appears to be distinguished from prophesying by consisting not of direct warning, exhortation, or prediction; but of thanksgiving, praise, prayer, singing, and other expressions of devotion. It was an utterance of the heart and feelings, rather than of the understanding, so that the actual words and meaning were generally unintelligible to the bystanders, and sometimes to the speakers themselves: 'He that speaketh with a tongue speaketh *not unto men, but unto God*; for no man understandeth; but in the Spirit he speaketh mysteries'—I Cor. xiv. 2, 4, etc. So far, the account of the gift seems intelligible. It was, as Dean Stanley says, 'a trance or ecstasy, which in moments of great religious fervor, especially at the moment of conversion, seized the early believers; and this fervor vented itself in expressions of thanksgiving, in fragments of psalmody or hymnody, and prayer, which to the speaker himself conveyed an irresistible sense of communion with God; and to the bystanders, an impression of some extraordinary manifestation of power, but not necessarily any instruction or teaching, and sometimes even having the appearance of wild excitement, like that of madness or intoxication.' The special difficulty, however, remains, viz., as to the character of intelligibility which, on one prominent occasion, seems to have belonged to the gift. *Glōssa*, or the word translated 'tongue,' does not necessarily imply a distinct language of a people; this is usually expressed in the New Test. by *dialektos*. But in the description in Acts ii. 6, 8, it is expressly said: 'Every man heard them speaking in his *own language*' (*tē idia dialektō*). 'How hear we every man in *our own language*' (the same phrase in the original) 'wherein we were born?' The plain meaning of this account seems to be, that the gift of tongues, on this occasion at least, assumed the form of intelligible communications in foreign languages. But there is no evidence that the apostles then, or at any subsequent time, had the ability, supernaturally imparted, of speaking a variety of languages, with a view to the more adequate discharge of their apostolic functions, as has sometimes been inferred from the passage in the Acts. 'Probably,' it has been said, 'in no age of the world has such a gift been less needed. The chief sphere of the apostles must have been within the Roman empire, and within that sphere, Greek or Latin, especially Greek, must have been everywhere understood. Even on the day of Pentecost, the speech of Peter, by which the first great conversion of a multitude was effected, seems to have been in Greek, which probably all the nations assembled would sufficiently understand; and the speaking of foreign dialects is nowhere alluded to by him as any part of the event which he is vindicating and describing.'—Dean Stanley (*Corinth.* p. 250).

TONICITY, MUSCULAR: state of healthy tension of muscular fibres when at rest. The contractility of muscles shows itself under two distinct forms—*Irritability* and *Tonicity*, which are distinct alike in the mode of their action and in the conditions requisite for their exhibition.

TONICS.

Irritability is most manifest in the voluntary muscles and in the heart, which, when in activity, exhibit powerful contractions alternating with relaxation; while tonicity is shown in a moderate and permanent contraction, which, instead of being consequent on stimulation through the nerves, as in irritability, is especially excited by change of temperature in the tissue itself, and is mainly shown in the involuntary or non-striated muscles. Like irritability, it is an inherent property of muscular tissue during life. 'It manifests itself,' says Dr. Carpenter, 'in the retraction which takes place in the ends of a living muscle when it is divided (as is seen in amputation); this retraction being permanent, and greater than that of a dead muscle. But its effects are much more remarkable in the non-striated form of muscular fibre; and are particularly evident in the contractile coat of the arteries, causing the almost entire obliteration of their tubes, when they are no longer distended with blood.' It is to the moderate action of the tonicity of arteries that their contraction on the current of blood passing through them is due. If the tonicity be excessive, the pulse is hard and wiry; but if it be deficient, the pulse is very compressible, though bounding, and the flow of blood is retarded. *Cold* is the most efficient agent in inducing tonic contraction; while the application of moderate warmth causes relaxation of this contraction: thus, cold and heat are of extreme value as remedial agents, when the tonicity of the blood-vessels is deficient or excessive.

TONICS, in Medicine: remedies which, in cases of lack of *tone* or *tonicity* in the muscular fibres, are employed to restore strength and vigor to the system. T., to a certain degree, are stimulants; but while the latter produce rapid but transitory excitement, the former slowly induce a certain degree of excitement, and the effect is permanent. Most T., in which category we must place the shower-bath, cold sea-bathing, open-air exercise, friction, etc., as well as actual medicines of this class, act primarily through the nervous system (iron being, perhaps, the only exception); and secondarily produce their effects on the muscular system at large. It is not only in general muscular debility that T. are to be employed, but in all the numerous disorders which follow in its train, e.g., palpitation, convulsions, epilepsy, chorea, neuralgia, and all forms of periodic disease. Among the chief medicines of this class are the dilute hydrochloric, nitric, nitro-hydrochloric, and phosphoric acids; various salts of bismuth, copper, iron, silver, and zinc; various kinds of cinchona bark, with their alkaloïds and their salts, cusparia, calumba, cascarilla, chiretta, gentian, quassia, salix, simaruba, and taraxacum. Although nux vomica and its alkaloid strychnine are placed by writers on *Materia Medica* among the 'special stimulants,' when given in very small doses they have a well-marked tonic action; and there is probably no tonic medicine of more general utility than the *Syrup of Iron, Quinine, and Strychnine*, a non-official but widely-used preparation, of which every dram (the ordinary dose) contains $\frac{1}{25}$ of a grain of strychnine.

TONIC SOL-FA.

TONIC SOL-FA, *tŏn'ík sŏl-fá'*: form of musical notation in which the staff with its lines and spaces is dispensed with. Various attempts have been made to introduce such a system. Jean Jacques Rousseau suggested, but afterward discarded, a notation where the notes of the scale were indicated by the Arabic numerals. A system similar to Rousseau's in its leading features, called the Tonic Sol-fa, has, through the influence of its principal promoter, the Rev. John Curwen (who obtained his main principles from the writings and practice of Miss Glover of Norwich), been brought into use to a considerable extent in singing-schools in Great Britain and the United States. It proceeds on the principle of giving the chief prominence to the fact that there is in reality but one scale in music, which is raised or lowered according to the pitch of the key. The seven notes of the diatonic scale are represented by the Solfeggio (q.v.) syllables, or rather Miss Glover's modification of them—*Doh, Ray, Me, Fah, Soh, Lah, Te*; *Doh* standing for the keynote in whatever key the music is written. In the early exercises, the pupils are accustomed to a scale or diagram, called the Modulator, representing pictorially the exact intervals of a key, with the semitones in their proper places. In written music, only the initial letters of the solfeggio syllables are used—d, r, m, f, s, l, t; the higher octaves of a given note being distinguished by a ¹ above, as d¹, r¹; and the lower by a ₁ or ₂ below, m₁, m₂. The name of the key is prefixed to a tune as its signature, as 'Key A,' 'Key B flat'—the keynote being, in all the major keys, *doh*. To indicate rhythm, a perpendicular line | precedes the stronger or louder

accent, a colon : the softer accent, and where necessary, a shorter perpendicular line | the accent of medium force. Preparatory to writing the notes, the accent-marks are placed at equal distances along the page—thus,

| : | : or : | : : | : : | :

or | : | : | : | : A note immediately following an accent-mark is supposed to occupy the time from that accent to the next—thus, | d : d : d | d : d : d | d, or

| d : r | m : d. A horizontal line indicates the continuance of the previous note through another *aliquot* (the term used by Curwen for the distance of time between any accent and the next)—thus, d : — | d : d. A dot divides

an aliquot into equal subdivisions, d : m.r | d. Modulator.

A dot after a mark of continuance indicates that the pre-

f ¹
m ¹
r ¹
d ¹
te
ta
lah
se
son
fe
fah
me
ray
doh
t ₁
l ₁
s ₁
f ₁
m ₁

TONIC—TO-NIGHT.

vious note is to be continued through half that aliquot—thus, $\left| d : -. f \right| m : d$. A comma indicates that the note preceding it fills a quarter of the time from one accent to the next—thus, $\left| d : r.m.f \right|$; a dot and comma together, three-quarters—thus, $\left| f.m : r.d. \right|$. An inverted comma is used to denote that the note preceding it fills one-third of the time from one accent to the next—thus, $: d \left| s : l.s.f \right| m : r \left| d$. An aliquot or part of it unfilled, indicates a rest or pause of the voice. A line below two or more notes signifies that they are to be sung to the same syllable. Subjoined is an example of the tonic sol-fa shown alongside of the ordinary notation:

KEY A.

AMERICA.

The image shows two staves of musical notation for the song 'AMERICA' in Key A. Below each staff is a line of tonic sol-fa notation. The first staff's notation is: $\left| d : d : r \left| t : -. d : r \right| m : m : f \left| m : -. r : d \right| r : d : t \left| d : -. : \right| s : s : s$. The second staff's notation is: $\left| s : f : m \left| f : f : f \right| f : -. m : r \left| m : f.m : r.d \right| m : -. f : s \left| l.s.f : m : r \right| d : -. : \right|$.

In modulating into a new key, the note from which the transition is taken is indicated by a combination of the syllabic name which it has in the old key with that which it has in the new—*me lah*, for example, being conjoined into *m'lah*; and in writing this note, the initial letter of its syllable, as a member of the old key, is placed in small size before and above the initial of the syllable of the new, as ^ml, ^ds. In the case, however, of an accidental, where the transition is but momentary, a sharpened note changes its syllabic vowel into *e*, and a flattened note into *aw*, spelled *a*, as *fah*, *fe*; *soh*, *se*; *te*, *ta*. In the minor mode, *lah* is the key-note; the sharp sixth is called *bah*, and the sharp seventh *se*. The signature of the key of A minor is 'Key C, minor mode.'

For a full explanation of this system, see Curwen's *Grammar of Vocal Music*, or the periodical called the *Sol-fa Reporter*. The advocates of this notation maintain that it possesses advantages over the common system, particularly from the distinctness with which it indicates the key-note and the position of the semitones; the cheapness with which it is printed; and the manner in which, they say, it develops the proper mental effects of notes in key-relationship, and employs them in teaching. It has, however, been objected to by some, for its withdrawal of the direct indication of pitch to the eye which exists in the common notation, for its limited applicability to instrumental music, and for its acquirement not being, like that of the ordinary notation, an introduction to the world of musical literature.

TONIC, TONICITY: see under TONE.

TO-NIGHT, n. ad. *tû-nî't'* [*to*, on, and *night*] the night at the close of the present day.

TONING—TONNAGE.

TONING, n. *tōn'ing*: the treatment of a positive photographic print with a weak solution of gold, in connection with other modifying chemical salts, by which the whole or a portion of metallic silver is replaced by metallic gold in fine division: the effect is to give permanency to the print, and to subdue and modify the disagreeable color, and substitute various shades of purple, black, blue, brown, and gray.

TONITE, n. *tōn'it* [L. *tono*, I thunder]: a powerful explosive agent, prepared from gun-cotton.

TONKA-BEAN, *tōng'kă-*, or **TONQUIN-BEAN**, *tōng'kwîn-* [F. *tonca*]: the fruit or seed of a shrubby plant of Guiana, possessing a very pleasant smell, used in the scenting of snuff; the plant *Dipterix odorata*, ord. *Legumīnōsæ*, subord. *Papilionacææ*, having pinnated leaves and axillary racemes of purplish flowers. The fruit is an oblong, dry, fibrous drupe, containing a single seed, which has a strong agreeable odor, due to the Coumarine (q.v.) which it contains, and which is sometimes found crystallized between the cotyledons. Tonka-beans are used for flavoring snuff, for which purpose one is carried in the snuff-box; and are put among clothes, to preserve them from insects and to communicate an agreeable odor.

TONKIN': see **TONQUIN**: **COCHIN CHINA**.

TON'NAGE: capacity of a ship expressed in register tons of 100 cubic ft., the 'register ton' being the unit on which port and other charges are levied. Prior to 1865 the rule followed in the United States in computing the tonnage of vessels was to multiply the extreme length (less one-third the breadth) by the breadth and the depth respectively, and then to divide by 95. In 1865 the British system (with modifications) was adopted. This, which dates from 1835 (though not perfected until 1854 and later), superseded in the United Kingdom a very imperfect system (established 1719) in which the depth was *assumed* to be equal to the breadth, the formula being:

$$\frac{\text{breadth} \times \text{breadth} \times \text{length}}{94} = \text{tonnage.}$$

Traders (desirous to save tonnage dues) naturally built their ships with as little beam as possible, producing deep wooden boxes capable of carrying a maximum of cargo with a minimum of beam, but highly dangerous in stormy weather. In the new system, however, actual measurements of depth are made at certain intervals along what is called the 'tonnage deck' (i.e., the second deck from below in all vessels of more than two decks, and the upper deck in all other vessels), the number of which depends on the total length of the vessel as measured along this deck. With a length of 50 ft., six depth-measurements are made (in the British system only 4); with a length of 50 to 100 ft., eight depth-measurements are made; and so on through the six classes (5 in the Brit. system) into which vessels are divided according to length. At each of these points, 'transverse areas' are computed and set down in ft. and decimals of a ft. These, except the first and last, are then

TONNAGE—TONSIL.

multiplied by certain numbers (4 for the even numbers, counting from the bow, and 2 for the odd), the sum of the products added to the sum of the first and last transverse areas (if any); the total is multiplied by one-third the common distance between areas, and then divided by 100. This represents 'the register tonnage below the tonnage deck.' To obtain the 'gross tonnage,' it is necessary to add the cubic content of all spaces above the tonnage deck, the poop (if any), deck-houses, etc. This is ascertained by multiplying the horizontal area of such spaces by the mean height, and dividing by 100, as before. In steamships it is customary to deduct the cubic content of the engine-room, and the space occupied by the screw-shaft, etc.

Displacement tonnage is found in the same way as register tonnage, except that measurements are made not along and from the tonnage deck, but from the load-water-line, and the final cubic content is divided by 35.

The Brit. system has also been adopted by Denmark, Austria-Hungary, Germany, France, Italy, Spain, Sweden, the Netherlands, Norway, Greece, Russia, Finland, Hayti, Belgium, Japan, etc., generally with slight differences, especially in the rules for deduction of engine-room in steamships; and was adopted in its essentials by the international congress at Constantinople 1873, in connection with fixing the basis for Suez canal charges.

TON'NAGE (properly **TUNNAGE**) AND **POUNDAGE**: tax of so much per *tun*, formerly levied on all wine imported into England, and of 12 pence per lb. on all merchandise imported or exported; abolished 1787.

TONQUIN, *tŏn-kĕn'* (better *Tong-king*;) region in the n.e. of the Indo-Chinese peninsula, bordering on s. China. It is mountainous in the n.; but the greater part of its area is the fertile basin of the important river Song-ka or Songcoi. Formerly an independent state, it has been for more than one hundred years a dependency of Anam (see **COCHIN CHINA**), forming its richest province. The French, moved by the hope of finding access into China by the head-streams of the Song-ka, have repeatedly intervened in the affairs of T.; and 1874 forced the Anamese to recognize their protectorate over T., and open its ports to trade. To enforce this claim, France occupied the delta of the Song-ka 1883, but met with difficulties; China still making opposition, even after a treaty had been signed 1884, recognizing Anam as practically a vassal-state of France. The cap. of T. is Hanoi, Kesho, or Cachao (q.v.).—The *Gulf of Z.* between T. and the island of Hainan, is 300 m. long by 150 m. wide.

TONQUIN-BEAN: see **TONKA-BEAN**.

TONSIL, n. *tŏn'sil* [*L. tonsil'la*, the tonsils]: one of two oblong glands situated on each side of the fauces, at the base of the tongue (see **PALATE**). **TON'SILLAR**, a. *-sĭl-lĕr*, or **TON'SILAR**, a. *-sĭ-lĕr*, pertaining to the tonsils. **TON'SILLITIS**, n. *-sĭl-lĭ'tis*, inflammation of the tonsils; a form of sore throat (see **QUINSY**). **TON'SILLIT'IC**, a. *-lĭt'ik*, or **TON'SILIT'IC**, a. *-ĭt'ik*, related to or connected with the tonsils.

TONSORIAL—TONSURE.

TONSORIAL, a. *tŏn-sŏ'rĭ-ăĭ* [L. *tonsorĭus*, of or belonging to shaving—from *tonsor*, a barber—from *tondĕrĕ*, to shave]: of or pertaining to a barber or shaving. **TON'SILE**, a. *-sĭl*, that may be clipped or shorn. **TONSURE**, n. *tŏn'shŭr* [F. *tonsure*—from L. *tonsŭra*, a shearing, a clipping: It. *ton-sura*]: act of clipping the hair or of shaving the crown of the head; state of being shorn; in the *Rom. Cath. Chh.*, the first ceremony performed in dedicating a person to the priesthood; the corona or crown on the head of a priest or monk, formed by clipping or shaving the hair, and varying in size according to the order and rank of the person (see below). **TON'SURED**, a. *-shŭrd*, shaven on the crown; shorn; bald.

TON'SURE: religious observance in the Rom. Cath. and oriental churches, which consists in shaving or cutting the hair, as a sign of the dedication of the person to the special service of God, and commonly to the public ministry of religion. The usage was not prevalent in the early ages of the church; and seems to have arisen in reference to the monastic rather than the clerical life. Paulinus of Nola, end of the 4th or beginning of the 5th c., alludes to it as then in use among the western monks; and it speedily passed from them to the clergy, the crown-like figure being regarded partly as a symbol of Christ's crown of thorns, partly as an emblem of the 'royal priesthood' of the Christian dispensation. The form of the T. differed in different churches. That of the Roman Church, called 'the T. of Peter,' consisted in shaving the crown as well as the back of the head, so that there remained a circular ring or 'crown' of hair: this was the usage in Italy, Gaul, and Spain. In the 'Scottish (or Irish) Tonsure,' in use in Ireland, in n. Britain, and in those parts of Germany in which the Irish missionaries had preached, the entire front of the head was shaved, leaving the front bare as far back as the line from ear to ear: this T. was called 'the Tonsure of James,' and sometimes of 'Simon the Magician.' The Greeks and other orientals shaved *the entire head*. The supposed derivation of the Irish form of T. from apostolic times led to its being held both in Ireland and in Britain, as well as other churches of Irish foundation, to be of vital importance, insomuch that the introduction of the Roman form was almost the occasion of a schism. Originally the T. was merely a part of the ceremonial of initiation in orders, and performed only in the act of administering the higher order; but about the 7th c. it became an independent ceremonial; and a question has been raised whether it is to be considered as itself an order, and to be added to the list of what are called the 'minor Orders' (q.v.). The now received opinion of Rom. Cath. writers is that T. is not an 'order,' but only a 'preparation for orders.'—See Wetzer and Welte's *Kirchen-lexicon*, art. 'Tonsur.'

TONTINE—TOOKE.

TONTINE, *n.* *tŏn-tĕn'* [*F. tontine*: so called from an Italian, Lorenzo *Tontŭ*, who originated the scheme in the 17th century]: an annuity of survivorship; an annuity shared equally by several individuals, the equal share being increased by the death of successive annuitants until the whole goes to the last survivor, or to the last two or three, according to the original agreement: see **INSURANCE—Life Insurance**.

TONTY, *tŏn'tĕ*, Chevalier **HENRY DE**: soldier and explorer: about 1650–1704, Sep.; b. Gaeta, Italy; son of Lorenzo T., inventor of the **TONTINE** (q.v.) system of annuities. T. was a soldier in early youth, and lost a hand, which was replaced by an iron one. He accompanied **LA SALLE** (q.v.) to America 1678; built forts on the frontier against the Iroquois; wintered at Green Bay, Mich., 1681; descended the Mississippi with La Salle 1682; returning to Mackinaw for aid to La Salle, he again descended the Mississippi, and found La Salle dead. T. died where Mobile now stands.

TOO, *ad.* *tŏ* [*AS. tŏ*, denoting an increase or addition (see *To*)]: more than enough; over and above; in addition; likewise; also.

TOOK, *v.* *tŭk*: *pt.* of **TAKE** (q.v.).

TOOKE, *tŭk*, **JOHN HORNE**: etymologist and political adventurer: 1736, June 25–1812, Mar. 18; b. London; son of John Horne, a London poulterer, or, as the son when at Eton School chose to express it to his aristocratic companions 'Turkey merchant.' He added to his name (Horne) that of **TOOKE**, 1782. He was educated at Westminster and Eton; and afterward at St. John's College, Cambridge, where he took the degree B.A. 1758. His strong desire was to study law; but, according to his father's wish, he took orders as an Anglican priest, and 1760 became curate at New Brentford. It was an unfortunate position, and appears to have impaired the honesty of his character. In a letter to John Wilkes (q.v.) he writes: 'It is true I have suffered the infectious hand of a bishop to be waved over me; whose imposition, like the sop given to Judas, is only a signal for the devil to enter; but I hope I have escaped the contagion.' When Wilkes (whose acquaintance Horne had made during a trip to Paris) stood as candidate for the county of Middlesex, T. zealously aided him, pledging his credit for Wilkes's expenses; but he afterward quarrelled with his dubious associate, and 1770–1 the two had a rasping epistolary controversy, to the gratification of their enemies. Horne still, however, continued to meddle in political affairs, and even ventured to encounter (not without success) the formidable Junius. In 1773 he resigned his living at New Brentford, and again turned to the study of law, for which he had a natural fitness. About this time, he rendered to a friend, William Tooke, of Purley in Surrey, important services—by a bold public attack preventing the passing of an act in parliament to Tooke's injury in regard to an estate which included Purley Lodge. In return, Tooke

TOOL.

designed to make him his heir, but eventually left him only a legacy of £500. Altogether, however, he is said to have received from this gentleman about £8,000; and, in consequence, adopted (1782) the surname by which he is known. In 1775 he was fined and imprisoned in the king's bench for signing an advertisement accusing the king's troops of barbarously murdering the Americans at Lexington and Concord. While in prison, he penned his celebrated *Letter to Mr. Dunning*, in which are the germs of his *Diversions of Purley*. It excited great attention; and even Dr. Johnson, who detested the writer's political sentiments, expressed his intention—should he publish a new edition of his *Dictionary*—to adopt several of the 'dog's' etymologies. On his release from confinement, T. tried to gain admission to the bar, but was refused, on the ground that his clerical orders were indelible. He reverted to political writing, at once the pleasure and the poison of his life; and in a *Letter on Parliamentary Reform* advocated universal suffrage. In the struggle between Pitt and Fox, he pamphleteered on the side of Pitt; but soon came to hate Pitt too, as he had learned to hate most other public men. In 1786 appeared H.-T.'s famous *Epea Pteroenta, or the Diversions of Purley*, a work on the analysis and etymology of English words, which has given fame to his friend's estate, inasmuch as, amid much that is erroneous in principle and detail, it contains much more that is acute, original, and true. In particular, he has demonstrated, according to a *Quarterly Review* (No. 14), that 'all words, even those that are expressions of the nicest operations of our minds, were originally borrowed from the objects of external perception' (see PHILOLOGY). But his passion for politics soon drew him from the calm pursuit of literature into the vortex of public life. In 1790, and again in 1796, H.-T. stood as candidate for Westminster, and made most able and forcible speeches from the hustings; but was unsuccessful. Meanwhile, 1794, May, he had been arrested for high treason and conveyed to the Tower; and on trial had been instantly acquitted by the jury. At length, 1801, this great enemy of rotten boroughs entered parliament for the most notorious rotten borough in England—Old Sarum; but at the end of one parliament he was excluded by an act which had been passed for the purpose, declaring ineligible for the house of commons all persons in holy orders. He died at Wimbledon. H.-T. was never married, but had several natural children, to whom he left his property. The best ed. of the *Diversions of Purley* is that of Taylor (Lond. 1840).

TOOL, n. *tól* [Icel. *tól*, tools: AS. *tól*, a tool]: an instr. or aid for any manual operation; a person used by another as an instr. to accomplish certain ends; a hireling; a figure or ornament impressed on cover of a book by means of a stamp or 'tool.' V. to shape or fashion with a tool: in *slang*, to drive, as a coach. TOOL'ING, imp.: N. workmanship performed with a tool, as in book-binding. TOOLED, pp. *tóld*. TOOLED-ASHLER or -ASHLAR, n. *tóld-ásh'ler*, m

TOOM—TOOT.

mason., ashler with its face chisel-dressed into parallel ridges and hollows.

TOOM, n. *tóm* [Sw. and Dan. *tom*; Icel. *tómr*, empty, unoccupied]: in *Scot.*, a place where rubbish may be emptied or poured out; a dump: ADJ. empty: V. to empty: see TEEM 2.

TOOMBS, *tómbz*, ROBERT: statesman: 1810, July 2—1885, Dec. 15; b. Wilkes co., Ga. He was educated in the Univ. of Virginia and in Union Coll., and was admitted to the bar 1830, while still a minor. He quickly rose to the highest rank in the legal profession of Ga. In the war with the Creeks, 1836, he was capt.; was member of the Ga. legislature 1837–40, and a leader in the whig party. He was a supporter of Gen. William H. Harrison in the presidential canvass of 1840, and of Henry Clay in that of 1844. Elected representative in congress 1844, he was member of the house for 4 successive terms, and 1853–61 was U. S. senator. In the house he powerfully promoted the passage of the Mo. compromise measure: in the senate he was uncompromising in his advocacy of the doctrine of state rights, and insisted on the necessity of maintaining and extending slavery. On the election of Abraham Lincoln, T. made a tour of his state, stirring up the people to revolt. He was member of the first Confederate congress, then was Confederate sec. of state, but resigned to take a brigadiership in the army. After active service in the field, he resigned his commission after the battle of Antietam, and returned to Ga. He went abroad at the close of the war, but returned to Ga. 1867, resuming law practice. As advocate of the state of Ga., he compelled the railroads to submit to the general tax law.

TOOMBUDRA, *tóm-būd'rá* (correctly, TUNGA-BHADRO): river, important tributary of the Kistnah or Krishna, rising in s.w. Maisur (Mysore), and after a n.e. course of 350 to 400 m. joining the Kistnah 25 m. below Karnul.

TOON, *tón*, or TOONA, *tó'na* (*Cedrela Toona*): tree of nat. order *Cedrelaceæ*, one of the largest timber-trees of India. Dr. Hooker mentions one which he measured, 30 ft. in girth at five ft. above the ground. The leaves are pinnate, flowers small, in panicles, with honey-like odor, petals erect and approaching each other so as to form a sort of tube. The tree grows at the height of 4,000 ft. on the Himalaya Mts., and is found to the furthest s. of the E. Indies. It is sometimes called *Bastard Cedar*. The wood is soft, but is used for furniture. The bark is a powerful astringent, and is used in dysentery, diarrhea, etc.

TOONGROO': see DHOORCATEE.

TOORKISTAN', or TURKISTAN': see TURKESTAN.

TOOT, v. *tót* [O. Dut. *tuyten*; Dan. *tude*, to blow a horn: Icel. *thjota*, to resound as the wind]: to blow a horn, flute, or other wind-instrument with little short blasts: N. a blast on the horn. TOOT'ING, imp. TOOT'ED, pp. TOOT'-ER, n. -*ér*, one who toots or plays on a pipe or horn.

TOOTH—TOP.

TOOTH, n. *tóth*; **TEETH** (q.v.), n. plu. *tēth* [Goth. *tunthus*; Ger. *zahn*; Dan. and Dut. *tand*; Icel. *tönn*, a tooth]: one of the bony processes growing in the jaws, used as the instrs. of biting and chewing (see **TEETH**); something pointed; a prong; one of the projections on the rim of a wheel by which it catches the prominent parts of another wheel or body; taste; palate: V. to furnish with teeth; to indent; to jag; to lock into each other. **TOOTH'ING**, imp.: N. in *building*, the irregular stones or bricks left jutting out at the end of a wall or building to form a union for any additional building. **TOOTHED**, pp. *tóht*: **ADJ.** having teeth or jags. **TOOTH'FUL**, n. *fúl*, a small quantity: **ADJ.** in *OE.*, palatable. **TOOTH'LESS**, a. *-lēś*, without teeth. **TOOTH'ACHE**, n. *-āk*, severe pain in one or more of the Teeth (q.v.). **TOOTH'SOME**, a. *-sūm*, grateful to the taste. **TOOTH'SOMENESS**, n. *-nēs*, the quality of being toothsome. **TOOTH'Y**, a. *-ī*, having teeth. **TEETH ON EDGE**, a disagreeable tingling sensation in the teeth, caused by grating sounds, or by the actual or imaginary contact of certain substances with the teeth, as an acrid or a woolen substance. **TOOTH-PICK**, or **TOOTH-PICKER**, a small article for picking out particles of food that have lodged between the teeth. **TOOTHWORT**, a parasitic plant, the *Lathræa squamaria*, ord *Orobanchæcæ*. **TOOTH AND NAIL**, with one's utmost power; by all possible means. **IN THE TEETH**, in direct opposition. **TO THE TEETH**, directly to one's face. **TO CAST IN THE TEETH**, to retort reproachfully. **TO SHOW THE TEETH**, to threaten. **IN SPITE OF THE TEETH**, notwithstanding threats expressed; in defiance of opposition.

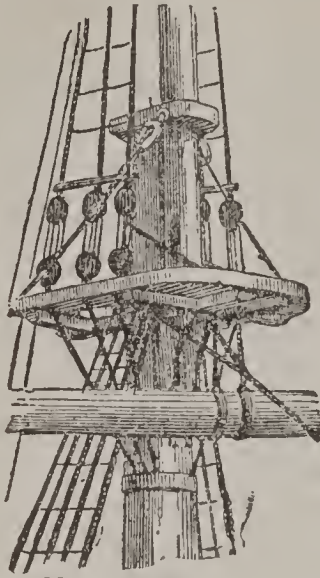
TOOTH'ACHE-TREE: see **ARALIA: XANTHOXYLUM**.

TOOTH'-ORNAMENT: architectural decoration much used in the Early English style.

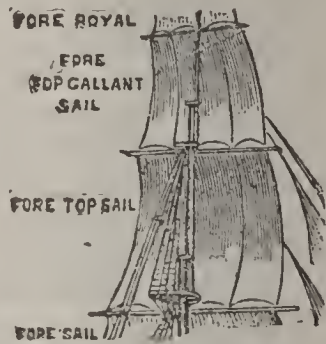
TOP, n. *tōp* [Icel. *toppr*, the top or summit: Sw. *topp*, a summit: Low Ger. *topp*; Dut. *top*, summit: Dan. *top*, a tuft, a top: Ger. *zopf*, a tuft, top of a tree]: the highest or uppermost part of anything; the surface; the highest place, person, or rank; the chief; the crown of the head: among *seamen*, small platform at the head of each lower mast. It is supported on the trestle-trees and cross-trees, and serves to give a wider base to the topmast shrouds. It is used also for working the upper sails. In a well-ordered ship there is a captain and crew for each top: **ADJ.** situated at the top or highest part: V. to rise to the highest place; to rise above others; to excel; to rise over and above; to cover on the top; to crop; to take off the upper part. **TOP'PING**, imp.: **ADJ.** fine; gailant; great; predominating. **TOPPED**, pp. *tōpt*: **ADJ.** surpassed; having the top cut off. **TOP'FUL**, a. *fúl*, full to the brim. **TOP-ARMOR**, in a *ship*, a railing on the top protected with netting. **TOP-BOOTS**, boots with an ornamental band of bright-colored leather on the upper parts; also called **TOPS**. **TOPCOAT**, a coat worn over the ordinary dress by men; an overcoat. **TOP-DRAINING**, surface-draining. **TOP-DRESSING**, manure laid on the surface without being turned or plowed in. **TOPGALLANT**, a. highest; elevated; that is above the topmast (see **TOPGALLANTMAST**). **TOP-HEAVY**, a. too heavy on the top;

TOP—TOPAZ.

tipsy. **TOP-KNOT**, a knot worn by women on the top of the head: a small fish (*Rhombus hirtus* and *R. punctatus*) of the same genus as the Turbot (q.v.) and Brill (q.v.—see also below). **TOPMAST**, the second mast above the deck, next the lower mast. **TOP'MOST**, a. -*mōst*. the uppermost;



Ship's Top.



Foremast, showing Top-gallant.

the highest. **TOP-PROUD**, in *OE.*, proud in the highest degree. **TOP-SAIL**, the sail extended across the topmast. **TOP-TIMBERS**, pieces in the ribs of a ship's side, which are next above the futtocks. **TOP OF THE TREE**, a high or the highest position in anything. **TO THE TOP OF HIS BENT**, as much as he could desire (see **BENT** 1).

TOP, n. *tōp* [Dut. *top*; Ger. *topf*, a spinning-top, so called from tapering to a *top* or point (see **TOP** 1)]: a child's toy, of a pear shape, which is made to spin on its point by means of a long string; also with a blunter point made to spin for any length of time by the continual application of a whip of several loose strands.

TOPAZ, n. *tō'pāz* [F. *topaze*—from L. *topāzus*; Gr. *topāzōs*]: one of the precious stones, occurring in finely striated crystals, transparent, of various colors, or colorless, most frequently yellow, and harder than quartz. **TOPAZOLITE**, n. *tō-pāz'ō-līt* [Gr. *lithos*, a stone]: pale-yellow, nearly transparent, variety of garnet. **TOPAZ-ROCK**, granular slaty mixture of quartz, schorl, and topaz.—*Topaz* is a mineral, ranked by mineralogists among Gems (q.v.), and whose finer varieties are much valued for their lustre and their beauty of color. It is composed chiefly of alumina and silica, the former, in general, more than 50 per cent. of the whole, with fluoric acid and usually a little oxide of iron. It is found generally in primitive rocks, and in many parts of the world. A crystal 19 ounces in weight was found in the Cairngorm Mountains in Aberdeenshire, Scotland. Fine topazes are found in Ceylon, but those most prized by jewellers are generally from Brazil. The finer varieties are found usually either crystallized or as small rolled masses which may have been formed from crystals, in alluvial soil. T. is colorless, or red, blue, green,

TOPE.

or yellow, in great variety of shades. Its crystals are rhombic prisms, generally terminated by four-sided pyramids, but often variously bevelled and acuminated. The prisms are finely striated. The cleavage parallel to the base of the prism is easy. The specific gravity is about 3.5. The lustre is vitreous. T. is translucent or almost transparent on the edges. It is harder than quartz. It is rendered very electric by heat or friction; and by this property a T. may at once be distinguished from a diamond or ruby, for which, otherwise, when cut and set, it might readily be mistaken. A coarse greenish-white variety, called *Pyrophysalite*, occurs near Fahlun, in Sweden, which is not crystallized. When reduced to powder, it can be used as emery for grinding and polishing.—T., though named from the *Topazion* of the ancients, seems to be a totally different mineral.

TOPE, v. *tōp* [Bav. *toppen*; Sp. *topar*, to knock: Sw. *topp*; F. *tōpe*, an exclamation representing striking hands on the conclusion of a bargain]: properly, to strike the glasses together before drinking; to pledge one in drinking; to drink frequently and to excess; to tipple. To'PING, imp. TOPED, pp. *tōpt*. TOPER, n. *tō'pēr*, a drinker to excess; a tippler.

TOPE, n. *tōp* [Hind.]: a grove or clump of trees.

TOPE, n. *tōp* [a Cornish word]: small species of shark, of the genus *Galeus* (*G. canis*) and family *Galeidæ*, having two dorsal fins and one anal fin, spout-holes, and the eyes furnished with a nictitating membrane, the first dorsal situated over the space between the pectorals and ventrals. The T. is very abundant on s. coasts of Britain, but rarer toward the north. Other local names are *Miller's Dog* and *Penny Dog*. It attains a length of about six ft. The T. is extremely troublesome to fishermen, robbing their lines of the fish and biting off the hooks; or, if it happens to be itself hooked, often winding the line round its body in many coils and with tangled knots.

TOPE, n. *tōp* [Pali, *thupa*; Skr. *Stupa* (q.v.), a mound, an accumulation]: a Buddhistic monument raised over or intended for the preservation of a relic or relics, called in Ceylon and elsewhere *dagopa* (the origin of our word 'pagoda'). Another designation of such monuments is *chaitya*. *Tope* (literally, 'accumulation') conveys a sense analogous to L. *tumulus*. *Dagopa* is a corruption of *dhātu-gopa*—i.e., relic-preserver; and *chaitya* is applied generally to objects of worship, as images, temples, sacred trees, etc. *Tope* is therefore the name of those monuments in regard to their shape; *dagopa* in regard to their purpose; and *chaitya* the general term. Though the shape of the T. underwent many changes, it is possible to distinguish its oldest type. The oldest topes are in the shape of cupolas, usually spherical, sometimes elliptical; resting on a cylindrical or quadrangular or polygonal base, which rises either in a straight or inclined line, or in terraces. The top of the cupola, surrounded by a balcony of pillars of a peculiar kind, is crowned by a structure generally

TOPE.

quadrangular, but sometimes in the shape of a reversed pyramid of a few steps; and over this structure is a roof in the shape of an extended parasol. This was the form, e.g., of the topes of Sanchi, of the dagopas of Ceylon, and the oldest monuments of this kind in the Punjab and Afghanistan; though in most of them the parasol, being of wood, is either completely destroyed or barely recognizable in its fragmentary condition (see BUDDHISM, where, in the section of the cave-temple at Karli, the T. is seen still surmounted by the wooden umbrella). The cupola was sometimes ornamented with more than one parasol; in some of the topes of Sanchi there are three and even five parasols side by side, the middle one exceeding the rest in height. The different arrangement of these parasols, es-



Fig. 1.—View of principal Sanchi Tope.—From Fergusson's *Hand-book of Architecture*.

pecially when their number increased, led to a different shape of the T., e.g., as in China and Tibet. This arrangement consists in placing them one *over* the other; and not only three or five, but even seven, nine, or more are so placed. The height of the structure thus became greater, and the topes, instead of having the character of cupolas, now assumed that of pyramids resting on a cupola base, the parasols gradually giving place to a real pyramidal form. In some monuments of this class, however, the cupola was placed above, when the base consists in round or quadrangular towers rising in a spiral form or in several stories. The Chinese, on the contrary, rejected the cupola altogether, and merely retained the succession of parasols extended one over the other, converting them into a many-storied tower (called *ta* by the Chinese, and *pagoda* by foreigners); and the same is the case with the topes of the Mongols, the *Ssuwurgans*, which are pyramids erected on a low quadrangular base. In the interior of the T. is the cell or chamber (*dhâtugarbha*) where the box containing the relics and 'the seven precious things' (mostly precious metals and gems) was placed. This cell consists of six slabs of stone, firmly closed after the box with the relics, etc., had been placed in it; and it was immured into the T. after it had been built to a certain height, so that when the T. was completed the cell enshrining the relic

was inclosed on all sides with solid brick-work.—That the cupola of the T. was intended to represent the water-bubble, the Buddhistic symbol of the hollowness and perishability of the world, is indicated by a legend in the *Mahāvans'a* (q. v.). As the parasol is the emblem of Hindu royalty, it is conjectured that the parasol of the T. was



Fig. 2.—Rock-cut Tope at Ajunta (from Fergusson), in which the three umbrellas have become a spire.

intended to imply the royal dignity of a Buddhistic saint. When the topes became pyramids or towers consisting of terraces and stories, the number of the stories likewise had a symbolical import: thus, only the topes of the most accomplished Buddhas had 13 terraces; three terraces imply the three worlds; five, the five steps of Mount Meru; etc.

TOPEE, or TOPĪ, n. *tō-pē'* [from Port.]: in *India*, a covering for the head, as a cork or pith helmet. SOLA TOPEE, *sō'lá*, a topee made of *sola* pith.

TOPEKA—TOPGALLANTMAST.

TOPEKA, *tō-pē'ka*: city, cap. of Shawnee co. and of the state of Kan.; on the Kansas river, and on the Union Pacific, the Atchison Topeka and Santa Fé, the Chicago Rock Island and Pacific, and the Missouri Pacific railroads; 45 m. s. w. of Leavenworth, 65 m. w. of Kansas City, 300 m. w. of St. Louis; 6 sq. m. It is in an agricultural, coal-mining, and stone-quarrying region, and on a high and healthful site, with excellent drainage. Water is supplied from the river by the Holly system, constructed 1880 at a cost of \$500,000, and there are more than 30 m. of mains and about 300 double hydrants for fire purposes. The city generally is lighted by electricity, there being 4 commercial plants, and a city plant for street lights. Local transit is provided by electric, steam-motor, and, horse-car lines; one electric road having the largest electric railroad plant in the world.—In 1902 the bonded debt was \$428,500; valuation of real property \$8,150,325; personal \$1,981,670. The city had more than \$1,500,000 invested in paving, sewers, water-works, sidewalks, etc., and more than \$200,000 in public buildings. There are 120 m. of streets. The new state capitol cost \$2,000,000; the state lunatic asylum cost \$1,500,000, and the state reformed school for boys cost \$120,000. The new U. S. Court-house and Post-office cost \$300,000. More than 50,000 pensioners draw more than \$7,000,000 annually at the U. S. pension office at T. In 1900 there was a total of \$3,891,530 invested in manufacturing enterprises, which yielded products valued at \$9,977,605. 1902, Sept., there were 3 national banks (cap. \$650,000), 3 state, 2 private, 1 savings and 1 incorporated; and a clearing-house assoc.; and 2 daily, 9 weekly, 3 semi-monthly, and 13 monthly periodicals. The public schools (1901) numbered 22, valued at \$500,000; the school population was more than 13,000; and 153 teachers were employed. Among denominational schools are Bethany College for Girls (Prot. Episc.), cost \$400,000; Washburn College for both sexes (Congl.), cost \$500,000; Seminary of the Assumption (Rom. Cath.); and large parochial schools belonging to the Rom. Cath. and German Luth. churches. The Meth. Episc. Church has plans for an advanced school to be known as the College of Topeka. Beside these schools there are numerous private schools, and 3 commercial colleges. The city liberally sustains a public library. There are 48 church buildings of all denominations. In 1900 T. ranked next to Minneapolis, as the most important milling point in the United States, having 10 mills, with machinery that cost more than \$720,000, and a capacity of 2,500 barrels per day. T. was incorporated as a city 1857 and became the state cap. 1861. For the fierce conflict on the slavery question 1854-58, in which T. was prominently involved, see KANSAS.—Pop. (1880) 15,452; (1890) 31,007; (1900) 33,608.

TOPGALLANTMAST: the third mast above the deck, i.e., the mast above the topmast. Hence, the *topgallant-sail* is the sail suspended from the topgallantmast.

TOPHACEOUS—TOPICS.

TOPHACEOUS, a. *tō-fā'shūs* [L. *tophacēus*, belonging to tufa or tuff—from *tophus*, tufa or tuff]: of the nature of or resembling tophus; gritty; sandy. **TOPH**, n. *tŏf*, or **TOPHUS**, n. *tŏ'fūs*, a swelling affecting a bone or the periosteum; a calcareous concretion about the joints, occurring chiefly in gouty persons.

TOPHANÉ, *tŏ'fā-nā* (correctly, **TOP-HANEH**, *tŏp-há'-néh*): a suburb of Constantinople (q.v.).

TOPHET, n. *tŏ'fēt*, or **TO'PHETH**, n. *-fēth* [derived by some from Heb. *toph*, a drum, from the beating of drums, and other discordant noises there, made to stifle the cries of the sacrificed children]: in *Scrip.*, a place s.e. of Jerusalem, in the valley of Hinnom, where the idolatrous Jews worshipped the fire-gods and sacrificed their children (see **GEHENNA**).

TOPHUS: see under **TOPHACEOUS**.

TOPIARY, a. *tŏp'ī-ēr-ī* [L. *topiarius*, belonging to ornamental gardening—from *topia*, ornamental gardening—from Gr. *topos*, a place]: shaped by cutting and clipping, as trees and hedges. **TOPIA'RIAN**, a. *tŏp-ī-ā'rī-ān*, of or pertaining to ornamental gardening.

TOPIC, n. *tŏp'īk* [Gr. *topikōs*, belonging to a place—from *topos*, a place, a topic: F. *topiques*, subjects of conversation: It. *topico*, topical]: subject of discourse or argument; a general head: in *rhet.*, one of the various general forms of argument to be employed in probable, as distinguished from demonstrative, reasoning; a general conception or proposition which may serve as a guide in the invention and choice of suitable arguments; a class or category of considerations or conceptions from which probable arguments can be drawn (see **TOPICS**): in *med.*, an external remedy. **TOPICAL**, a. *tŏp'ī-kāl*, pertaining to a topic (in its rhetorical sense); hence, merely probable, dealing with a particular topic or theme, as a *topical* arrangement; referring to local matters as *topical* allusions: in *med.*, applied externally and to a particular part, as a poultice, a blister, and the like. **TOP'ICALLY**, ad. *-lī*.

TOPICS [Gr. *topike*, from *topos*, a place]: name given by the Greek and Roman rhetoricians and grammarians to the art of discovering arguments. It consisted in the eliciting out of the series of particulars certain general conceptions and propositions, which, in the elaboration of oratorical discourses, served as guides in the invention and choice of suitable arguments. Any one such general conception was called in Greek *topos*; in Latin, *locus communis* (a 'common place'). The Greeks gave much attention to this art; among the Romans. Cicero composed *Topica*, and various other treatises of a kindred nature. During the middle ages, it was proposed to apply it to the whole circle of human knowledge, and even to the solution of the most difficult intellectual problems; but, in general, these efforts only resulted in empty exhibitions of mental vivacity (*jeux d'esprit*); and in modern times the so-called 'art' has been entirely discarded.

TOPLADY—TOPPLE.

TOPLADY, *tŏp'la-dŭ*, AUGUSTUS MONTAGUE: English clergyman, controversialist, and hymnist: 1740, Nov. 4—1778, Aug. 11: b. Farnham, Surrey. He was educated at Westminster School, London, and Trinity Coll., Dublin; was ordained 1762, and became vicar of Broad Hembury, Devonshire, 1768. He wrote much for the *Gospel Magazine*. T. was a great champion of Calvinism. His controversial writings are directed against the followers of Wesley, and show an unfortunate theological asperity. He was a far better poet than controversialist; and some of his hymns have a place in all popular collections in England and America: one of his hymns is the familiar *Rock of Ages*.

TOPOGRAPHY, n. *tŏ-pŏg'ră-fŭ* [Gr. *topos*, a place; *graphō*, I write or describe: F. *topographie*]: literally, a description of places, as of rivers, hills, woods, etc.; but especially a detailed description of a particular place, as a city, a town, a tract of country, etc., including notices of all its features—differing thus from geography in being more minute. **TOPOGRAPHIC**, a. *tŏp'ŏ-grăf'ik*, or **TOP'OGRAPHICAL**, a. *-ŭ-kăl*, pertaining to topography; descriptive of a particular place or of places. **TOP'OGRAPHICALLY**, ad. *-lŭ*. **TOPOGRAPHER**, n. *tŏ-pŏg'ră-fēr*, one who describes particular places in writing; also **TOPOG'RAPHIST**, n. *-fist*.

TOPOG'RAPHY, **MILITARY**: minute description of a place or country, for military purposes. Among the first necessities of a military commander is a thorough knowledge of the physical conformation, the obstacles, and the resources of the region in which he has to operate. It frequently happens that the field of warfare is one of which no careful survey is procurable. It devolves, then, on the officers of the staff to make their chief acquainted with all requisite particulars; hence, topographical drawing is a principal element in military study. One sent out from an army on a topographical survey is expected to traverse a country with rapidity, to measure distances by eye or intuition, to note them down roughly as he rides, to obtain a general knowledge of hills and valleys, of roads and ravines, rivers and the means of crossing them. He must at the same time acquaint himself with the means of sustenance in the country, with the feelings of the people—friendly or hostile—with the transport which can be drawn from the inhabitants, with the position and strength of fortified places, etc. After his reconnaissance, often fatiguing and dangerous, he is expected to submit an eye-map or a full report.—See **ENGINEERS**, **UNITED STATES CORPS OF**.

TOPONOMY, n. *tŏ-pŏn'o-mŭ* [Gr. *topos*, a place; *onoma*, a name]: the place-names of a country or district; a register of such names. **TOPONYMICAL**, a. *tŏp-o-nŭm'ik-al*, of or pertaining to toponomy or place-names.

TOPPED, **TOPPING**, **TOPMOST**, etc.: see under **Top 1**.

TOPPLE, v. *tŏp'pl* [from **Top 1**]: to fall forward, as something that is top-heavy; to tumble. **TOP'PLING**, imp. *-pling*: **ADJ.** threatening to fall. **TOPPLED**, pp. *tŏp'pld*.

TOP-SHELL—TORE.

TOP'-SHELL: see **TROCHIDÆ**.

TOPSY-TURVY, ad. *tõp'si-tër'vĩ* [a corruption of the phrase, *topside t'other way*; or, as has been suggested, from the idea that the *topside* is to be *turfy* or placed upon the ground]: in an inverted posture; bottom upward; in confusion.

TOQUE, n. *tõk*, or **TOQUET**, n. *tõ-kā'* [F.]: a kind of head-dress, formerly worn by both men and women; a small hat with turned-up brim; in modern usage, a bonnet consisting of a round close-fitting crown without brim. **TOQUE**, n. a kind of money of account, equal to 40 cowries, used by traders on the west coast of Africa.

TOR, n. *tõr* [AS. *torr*, a high hill, a peak (see also **TOWER**)]: in *Devon* and *Derbyshire*, England, a tower; a high, pointed hill; a jutting rock.

TORAH, n. *tõ'rā* [Heb. *Torah*, the law]: the laws of the Jews as recorded in the Pentateuch; the Pentateuch.

TORBANE HILL MINERAL: mineral known also as **BOGHEAD COAL** (see **TORBANITE**), valuable as a source of Paraffin Oil or Naphtha (q.v.). Whether it is to be classed as coal or as shale has been debated among men of science.

TORBANITE, n. *tõr'bā-nīt* [*Torbane Hill*, near Bathgate, Scotland]: well-known species of cannel-coal, used for the manufacture of paraffin-oil, candles, etc.; **Torbane Hill Mineral** (q.v.).

TORBERT, *tor'bért*, **ALFRED THOMAS ARCHIMEDES**: soldier: 1833, July 1—1880, Sep. 30; b. Georgetown, Del. On graduating from West Point, he was assigned to an infantry regt., and served 5 yrs. on the frontier. At the outbreak of the civil war he was lieut.; was made col. of the 1st N. J. regt., and capt. in the regular army, 1861. Through the Peninsular campaign he commanded a brigade; was commissioned brig.gen. of volunteers 1862, and was in the battle of Gettysburg. Thereafter he commanded cavalry troops, and 1864, Aug. 8, was chief of cavalry in Sheridan's army of the Shenandoah. By his brilliant services he earned the brevet rank of maj.gen. of vols. 1864, Sep. 19, and of maj.gen. in the regular army 1865. He was in the diplomatic service 1869–78.

TORCE, *tawr'ss*: in *her.*, garland or wreath of twisted silk, by which the crest is joined to the helmet (see **TORSE**).

TORCH, n. *tõrch* [F. *torche*, a torch, the wreathed wisp of wad or straw placed between the head and the burden on it—from mid. L. *tortīa*, a torch—from L. *tortus*, pp. of *torquēre*, to twist]: a light to be carried in the hand when lighted, formed of some combustible material, such as resinous wood, or of cotton, hemp, or flax, well tarred, or steeped in grease or the like; a flambeau. **TORCH-BEARER**, one who carries a torch lighted. **TORCH-LIGHT**, the light given by torches.

TORE, v. *tõr*: pt. of the verb **TEAR** (q.v.): N. the dead grass which remains on mowing land during winter and spring.

TORE, n. *tõr*: see **TORUS**

TOREADOR—TORLONIA.

TOREADOR, n. *tōr-ě-ă-dōr'* [Sp.—from *toro*, a bull]: in *Spain*, an amateur bull-fighter, who kills the bull from horseback with a short, broad-headed spear; the *toreador* only appears now at royal feasts in Madrid, and is always accompanied by a troop of professionals; *torero* is the general name for a professional bull-fighter.

TOREUMATOGRAPHY, n. *tō-rū'mă-tōg'ră-fĩ* [Gr. *to-reuma*, embossed work; *graphō*, I write or describe]: a description of sculptures and basso-relievos, especially in metal; also **TOREU'MATOL'OGY**, n. *-tōl'ō-jĩ* [Gr. *logos*, discourse].

TOREUTIC, a. *tō-rū'tik* [Gr. *toreutikos*, pertaining to work in relief—from *toreuō*, I work in relief]: carved or embossed—applied to figures in metal, hard wood, ivory, etc.

TORGAU, *tor'gow*: town of Prussia, and a fortress of the second rank; on the left bank of the Elbe, 70 m. s.s.w. of Berlin, 12 m. n. of the frontier of Saxony. The river is here crossed by a bridge 500 paces in length, supported on 15 stone piers. Among public buildings are the castle, on an island in the Elbe, begun 1481, now used as a barrack and magazine, and comprising a chapel consecrated by Luther 1544; a town-church, with pictures by Cranach; a gymnasium, and other schools. Weaving and brewing were formerly briskly carried on at T., but this industry has declined. A battle was fought here 1760, Nov., in which Frederick II. of Prussia defeated the Austrians.—Pop. (1885) 10,988—a large proportion soldiers.

TORGET, *tor'ghët*: small island off the n.w. coast of Norway, lat. 65° 30' n. It serves as a landmark to sailors, is the haunt of numerous water-fowl, but is noteworthy chiefly for its lofty rock called Torghatten (the Hat of Torget), which rises 756 ft. above sea-level, and is pierced, near its top, by a cave or passage 80 ft. wide and 1,300 ft. long.

TORLONIA, *tor-lō'nî-â*: princely Roman family, remarkable for wealth and for their extraordinarily sudden rise from the very lowest condition. Their origin is traced to a poor 'cicerone,' Giovanni T. (b. 1754), who hung about the Piazza di Spagna in Rome, and gained a precarious living by showing visitors over the Colosseum. By steadiness and honesty, he obtained reputation, became afterward an agent of the French emissaries sent to excite the Roman populace to revolution, and on the failure of this project was left with considerable funds in his hands; he afterward married a widow of some property, and became a merchant, gradually rising, by keen foresight and enterprise, to the position of a stock-broker, usurer, and money-dealer; and by acquiring mortgages over the properties of the impoverished Roman princes, and by various other happy ventures, ultimately amassed immense riches. He was made a grandee of Spain, and Duke of Bracciano by the pope. His three sons allied themselves with princely families of the highest rank; the eldest succeeded to the dukedom, and the two others carried on their father's business. The youngest became Prince of Civitella-Cesi and Duke of Ceri.

TORMENT—TORNEA.

TORMENT, v. *tôr-měnt'* [F. *tourment*, torment—from L. *tormen'tum*, a cord or rope, an instrument of torture—from *torquēō*, I twist]: to put to extreme pain or anguish; to torture; to harass; to distress; to tease or vex: N. *tôr'měnt*, extreme pain; torture; misery. **TORMENT'ING**, imp.: **ADJ.** paining to a distressing degree. **TORMENT'ED**, pp. **TORMENT'ER**, n., or **TORMENT'OR**, n. *-ēr*, one who torments; a kind of harrow on wheels for reducing a stiff soil. **TORMENT'ING-LY**, ad. *-lĭ*.

TORMENTIL, n. *tôr-měn'tĭl* [L. *tormen'tum*, torture, anguish (see **TORMENT**)]: plant of the genus *Tormentilla*, ord. *Rosacēæ*, sub-order *Potentilleæ*, differing from *Potentilla* (q.v.) only in the 4-parted calyx and corolla, and now united with it by many botanists. The **COMMON T.** (*T. officinalis*, or *Potentilla tormentilla*) is a common plant in moorish and heathy places throughout great part of Europe. It has a large woody root, which has long been officinal, being an agreeable and efficacious astringent, useful in diarrhea and other disorders; and containing tannin, gum, and a red coloring matter, not soluble in water, used by the Laplanders for staining leather red. The leaves are ternate, leaflets lanceolate and inciso-serrate, stems ascending and forking, flowers yellow.

TORMINA, n. plu. *tôr'mĭ-nă* [L. *tormĭna*, gripes, colic—from *torquēō*, I twist]: in *med.*, griping or twisting pains, especially in the belly. **TOR'MINOUS**, a. *-nŭs*, affected with or characterized by tormina.

TORN, v. *tŏrn*: pp. of **TEAR** (q.v.).

TORNADO, n. *tôr-nă'dŏ* [Sp. *tornada*, a return—from *tornar*, to return (see **TURN**)]: any violent storm, whirlwind, or hurricane, usually attended with thunder, lightning, and rain, generally limited in area, and of short duration; a whirlwind or whirlstorm: see **CYCLONE**: **STORMS**: **HURRICANE**: **WIND**: **WHIRLWIND**: ETC.

TORNEA, *tor'ně-ŏ*: river, forming part of the boundary-line between Russia and Sweden; rising in Lake Tornea, in Sweden, and, flowing s.e. and s. between Russia and Sweden, entering the n. extremity of the Gulf of Bothnia, after a course of 250 m. At its mouth is the small town Tornea (q.v.).

TOR'NEA: town in Finland, 65° 50' n. lat., 24° 10' e. long.; on the peninsula of Svensar, at the mouth of the Tornea, in the Russian govt. of Uleaborg. The people are engaged in the exchange-trade with the more northern and scantily inhabited districts of Finland and Sweden, of which T. is the active centre, as the most northerly town in the Russian empire; deals, salt-fish, tar, hemp, reindeer skins and other peltries being brought to T., to be exchanged for tobacco, spirits, manufactured goods, etc. T. is often visited in summer by travellers, to witness the sun remaining above the horizon both night and day at the summer solstice. T. was several times taken from Sweden by the Russians before its final cession with all w. Finland, to Russia, at the peace of Frederickshamm, 1809.—Pop. 968.

TORO—TORONTO.

TORO, *tō'rō*, or **TOR'RO**: ancient and decayed town of Spain, in the modern province of Zamora; on the right bank of the Douro, 21 m. e. of Zamora. It contains numerous religious houses, mostly in decay: there are brandy distilleries and brick and tile works.—Pop. 7,000.

TORONTO, *tō-rōn'tō*: city, cap. of York co. and of the province of Ontario, Canada; on a large sheltered bay on the n. shore of Lake Ontario, lat. 43° 39' n., long. 79° 23' w.; 165 m. from Kingston, 310 m. w.s.w. of Montreal, 513 m. s.w. of Quebec, 500 m. n.w. of New York; on a bay on the n.w. shore of Lake Ontario, and on the Grand Trunk and the Canadian Pacific railroads; 15½ sq. m. The scenery of the vicinity is somewhat tame, and the situation of the town is low and flat, the most elevated quarter—the Queen's Park in the west, containing the univ., observatory, and handsome private residences—being only 100 to 200 ft. above the level of the lake. The harbor or bay, about 5 m. long and a mile wide, is formed by a curving spit of land extending 3 m. s. and w. into the lake. T. has somewhat the appearance of an English town; is regularly laid out with streets crossing at right angles; and is provided with city water-works, street railroads, gas and electric light plants, paid fire department, and fire-alarm telegraph and telephone services. There are more than 260 m. of streets, phalt. A project is being considered to create a new water-supply by bringing water from the lakes n. of the city by gravity, at a cost of about \$5,000,000. Among the public parks, which aggregate 1,000 acres, the largest and most attractive are: High, overlooking the lake to the w.; Queen's, with the new houses of parliament facing the main entrance; and Riverdale, overlooking the valley of the Don.—There are some 10 local banks, and 4 branches of banks in Quebec and Montreal. Of about 160 places of worship, the Meth. Church has 40; Episc. 39; Presb. 28; Bapt. 16; Rom. Cath. 11; Congl. 7; Salvation Army 6; Luth. 2; Ref. Episc. 2; and Jew 2. The most notable edifices architecturally are the Anglican Cathedral of St. James, with a grand steeple and a famous chime of bells; the Rom. Cath. Cathedral of St. Michael, recently improved and redecorated; the Presb. Church of St. Andrew; the Meth. Metropolitan Church; and the Bapt. Church on Jarvis street. There are more than 50 public schools, with 35,000 enrolled pupils and 24,000 in average daily attendance, for the support of which \$600,000 is appropriated every year; beside 18 Rom. Cath. parochial schools, with more than 4,000 pupils, and other Rom. Cath. primary and secondary institutions.—Among the institutions for advanced education, for which T. has long been noted, are Upper Canada College, under the control of the provincial govt.; Trinity Univ., founded by Bp. Strachan, of the Anglican Church, 1851, and having in affiliation with it Trinity Medical College, the Women's Medical College, St. Hilda's College for Women, and several minor schools; McMaster Hall, a Bapt. college, made a univ. 1887, endowed by bequest of the late Senator McMas-

TOROSE.

ter with \$800,000, and affiliated with several Bapt. colleges; Knox College, the principal theol. school of the Canadian Presb. Church; Wycliffe College, an Anglican theol. school; St. Michael's College, a Rom. Cath. seminary; and a College of Pharmacy, Veterinary College, College of Physicians and Surgeons, Royal College of Dental Surgeons of Ontario, and a College of Music. The most notable institution of all is the Toronto Univ., founded by royal charter as King's College 1827, and liberally endowed with public lands. In 1860 the univ. occupied a new and attractive building that cost more than \$500,000, and a beginning had been made in an effort to perfect a complete univ. federation for the whole province; but 1890, Feb. 14, the building was totally destroyed by fire, with its library. New buildings, of imposing architecture, forming a quadrangle, have been erected. The principal public building is Osgoode Hall, the seat of the superior courts of the province. The new municipal buildings and the new houses of parliament cost \$2,500,000.—T. has large foreign and domestic trade, and manufactures chiefly boots and shoes, furniture, clothing, whisky, and ale. It was founded 1794 by Gov. Simcoe; was burned by the U. S. troops 1813; was the seat of govt. for Upper Canada till 1841; alternated with Quebec as the seat of govt. 1849-58; and since 1867 has been the permanent cap. of the province. It was known as Muddy York and York till 1834, when it was chartered under its present name.—Pop. (1881) 77,034; (1901) 208,040.

TOROSE, a. *tō-rōs'*, or **TOROUS**, a. *tō'rūs* [L. *torus*, a knot or bulge]: in *bot.*, uneven; alternately elevated and depressed; swelling in knobs.

TORPEDO—TORPEDO-BOAT.

TORPEDO, n. *tŏr-pĕ'dō* [L. *torpĭdo*, stiffness, numbness —from *torpĕrĕ*, to be still, to be stiff with frost: It. *torpedine*]: the cramp-fish; a fish which gives electric or benumbing shocks when touched; also the genus to which this fish belongs (see below): a machine or engine which, partially submerged in the sea, explodes on contact with a ship's side, either greatly injuring or wholly destroying it; the name is also given to other destructive agents in warfare. *Note*.—TORPEDOES are either submerged and fixed in order to protect a harbor or coast against hostile attacks, or are sent directly against an enemy's ship by means of internal motive-power from a specially constructed and very swift steam-vessel called a TORPEDO-BOAT (see TORPEDOES).

TORPE'DO: genus of fishes of order *Raia*e (see RAY), family *Torpedinidæ*. All the *Torpedinidæ* were formerly



Torpedo (Torpedo vulgaris).

included in this genus, itself originally formed from *Raia*; but it has been divided into a number of genera, as *Torpedo*, *Narcine*, *Astrape*, etc. The *Torpedinidæ* have a short and not very thick tail, cylindrical toward the end, keeled on the sides. The disk is rounded, and has neither scales nor prickles. The most remarkable characteristic, however, is the galvanic battery, which all the species possess: see ELECTRICITY, ANIMAL. The name T. is commonly extended in a popular sense to all the *Torpedinidæ*. Two species of T. are occasionally found on s. coasts of England—*T. vulgaris* or *marmorata*, which sometimes attains a large size, weighing 100 lbs.; and *T. Nobiliana*, apparently more rare: they are readily distinguished by the spiracles behind the eyes, which are round and fringed at the edges in the former, oval and perfectly smooth in the latter. These and other species are more plentiful in the Mediterranean, and the *Torpedinidæ* generally belong to the warmer seas. The popular names *Numb-fish*, *Cramp-fish*, and *Cramp Ray* are given to torpedoes. The electric shock which a large T. gives when seized is so severe that no one desires to experience it a second time.—*T. occidentalis* occurs on the Atlantic coast of the United States; it is black above and white below. *T. Californica* is spotted.

TORPE'DO-BOAT: boat designed to place torpedoes under or against vessels for their destruction. The conception of a modern T.-B. is a very fast vessel, dependent for offensive purposes entirely on torpedoes and on her

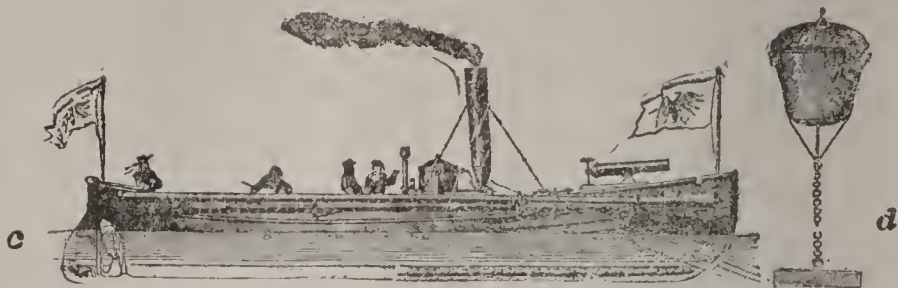
TORPEDO-BOAT.

speed, while the speed is almost her only protection. Everything is sacrificed to high speed, and incidentally to lightness. As a type of a wooden torpedo-boat, the *Stiletto*, of the U. S. navy, may be cited. This boat is 90 ft. long between perpendiculars, 94 ft. long over all, 11 ft. beam, 8 ft. depth, and draws only 2 ft. 10 inches. She is rated at 18.2 knots. She was the navy's first torpedo-boat, and is now used for practice. The *Porter*, which was in Admiral Sampson's fleet during the Spanish-American war, was the first high-speed vessel of her class to be added to the navy. On her trial trip in 1897 she maintained a speed of 28.74 knots on a 60 m. run. Her shell is of 3-16 in. steel. She is 175 ft. long, 17½ ft. beam, and draws 5½ ft. of water. In addition to a small armament of one-pounder, rapid-fire guns, she carries 3 torpedo tubes, 2 broadside, and 1 stern. Four officers and 16 men make up her crew. As a type of a steel torpedo-boat, the *Cushing*, also of the United States navy, may be described. This ranks as a sea-going boat. She is 137½ ft. long between perpendiculars, 15.05 ft. wide, 9.21 ft. feet deep, draws 4.50 ft. She is driven by 50-inch bronze twin screws. Her engines are quadruple-expansion, each of 800 horsepower, 15-inch stroke; cylinder diameters, 11¼, 16, 22½; and two low-pressure, each 22½ inches. The boilers work at over 200 lbs. to the sq. inch. The hull is of galvanized steel, divided into water-tight compartments, some of which form protective coal-bunkers. The torpedoes are launched by electric connections from one or from two tubes simultaneously at the will of the commander. She carries also a torpedo-gun amidships. The torpedoes can, by the improved mechanism, be discharged while the boat is at full speed. As armament she carries six-pounder Hotchkiss breech-loaders, gatling-guns, etc. Her speed on her trial trip was at the rate of 22½ nautical m. per hour.

In European practice, torpedo-boats have proved poor sea-boats, and very uncomfortable and trying for their crews. Their record is decidedly a bad one as regards breaking down while in service. Their plan of attack is to approach as closely as possible without detection, and then to run toward the enemy at high speed to discharge their missiles. To detect them, the larger vessels are provided with search-lights, while nets are hung over the sides to prevent the torpedoes from striking the hull. Noiselessness is a very important feature, which in the *Cushing* is claimed to be attained in a high degree.

A recent English boat, the *Bathurst*, 130 ft. long, 13½ ft. beam, showed for two hours' run an average speed of 24.426 nautical m. per hour, and for a single mile 26.086 nautical m., or over 30 land m., per hour. The Russian govt. in recent contracts requires, it is said, a guaranty of 26½ nautical m. per hour.

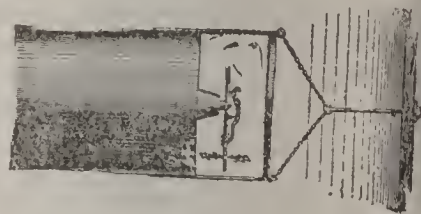
The U. S. dynamite cruiser *Vesuvius*, throwing large projectiles filled with high explosives through the air by compressed air, with a range of more than a mile, is really a special type of torpedo-boat. She is of peculiar type, and was used effectively at Santiago in 1898.



c, Small Torpedo-boat with Pole Torpedoes.

d, Contact Torpedo.

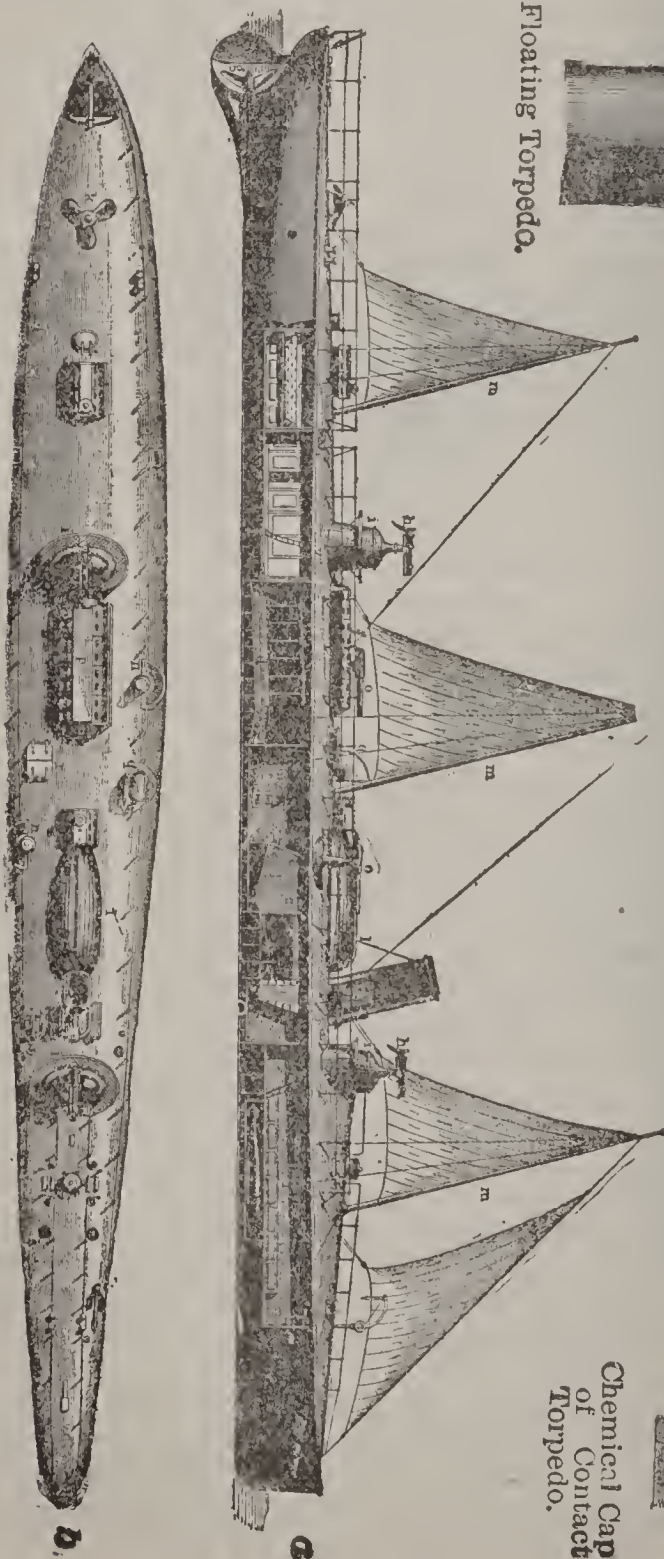
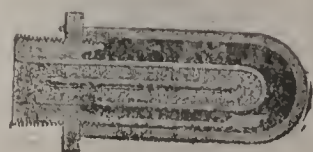
Floating Torpedo.



Electrical-steering Fish Torpedo.



Chemical Cap
of Contact
Torpedo.



Torpedo-boat built for the Chinese Government.

a, Sectional view.

b, Deck plan.

TORPEDOES.

TORPE'DOES: properly, explosive devices for inflicting injuries on an enemy's ships below the water-line, though during the war between the United States and Great Britain 1812-14, this name was applied to mysterious boats invented by Fulton and other Americans intended to be navigated beneath the surface of the water, and directed against the bottoms of hostile vessels. Modern T. are of two kinds—first, the locomotive torpedo, which is in various ways projected against the side of a hostile vessel; this is the torpedo proper, and is an offensive device; secondly, the fixed torpedo, a kind of stationary bomb-shell intended to explode under the bottom of the enemy's ship, and properly a defensive device: to these fixed torpedoes it is now more usual to give the appropriate name of submarine mines.

The weapon was used first by the Russians in the Baltic 1854; but in the Amer. war of secession of 1861-65 it was extensively and often successfully employed. The damage effected by a torpedo exploding beneath a ship is very great, but the failures are very frequent by the explosion

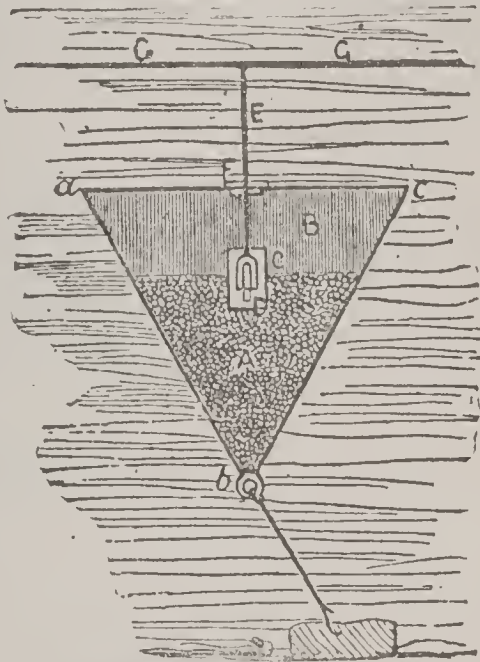


Fig. 1.

happening at a wrong moment. In the Franco-German war 1870-1, the French fleet was effectually scared from the Prussian ports by the dread of T.; and they were much employed in the Russo-Turkish war of 1877.

Of fixed T., or submarine mines, there are two classes—those which are self-explosive on a ship touching them, and those whose explosion depends on an electric current from the shore. A torpedo of the self-acting class is shown in fig. 1: *abc* is a hollow iron cone, water-tight, with a ring at *b* by which to anchor it. The upper part, *B*, is left empty, for the sake of buoyancy, while the lower end, *A*, is filled with gunpowder, the charge varying from 100 to 300 lbs. At the top of the powder is an iron case, *C*, filled with lime, and in it a tube of thin glass, *D*, containing sulphuric acid. The upper part of the glass tube is enveloped by the

TORPEDOES.

ringed end of the iron rod, E, which passes through the top of the torpedo, and some distance above it; and has horizontal rods, G, called feelers, attached rigidly to its upper extremity. When a ship impinges on the feelers, the rod is deflected from the perpendicular; the ring at its lower end breaks the glass tube; the acid, acting on the lime, generates great heat, and explodes the powder.

In the electric torpedo a wire insulated in a small cable is laid from a battery on shore to the submarine mine. It enters it by an insulated joint, and is then soldered to a small piece of platinum wire placed in the middle of the priming of the torpedo; from the other end of the platinum a second wire communicates with the metal sides of the torpedo case. On closing circuit at the battery, the current passes by the cable into the torpedo, heating the platinum to incandescence, and exploding the mine. There is thus no need of a second cable; the water and the earth take its place. Submarine mines are charged usually with gun-cotton, which has the great advantage of being explosive by means of a fulminating fuse, even when wet through leakage of the torpedo case.

Submarine mines are usually moored or laid on the bottom in several lines, the mines of the second line opposite the intervals of the first, so that it is difficult for a hostile ship to pass up a defended channel without coming within reach of one or more of them. As a ship approaches, her course is carefully watched so as to fire a mine at the right moment. To explain how this is done, let us take the case of the channel AB.

Two or more lines of mines are laid down across its mouth. For clearness only a few of those of the first line are shown in the diagram. At C and D two stations are

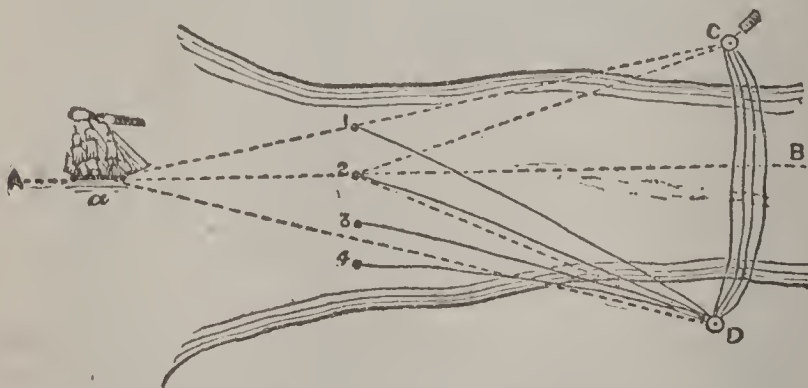


Fig. 2.

selected, commanding a view of the defended waters. At C is the voltaic battery, and the wires from the mines connect them with D, while a second series of wires, each corresponding with one of the first series, connects D and C. There are thus two breaks in the circuit of every mine—one at C, where a number of 'firing-keys' are arranged so as to place at will the battery in connection with any of the wires; the second break is at D, where similar firing-keys connect at will each wire of one series with the corresponding wire of the other. A ship is seen approaching on the course AB. When she is at α , the observer at C

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notices that her bearing is the same as that of mine No. 1. He therefore closes the break in the first circuit by means of the firing-key, but no current passes, for the observer at D sees her well to the left of the bearing of mine No. 1, and therefore leaves his break open. Not until she is actually over No. 2 will both observers at the same moment see that her bearing corresponds to that of No. 2, and, closing both breaks in the circuit, fire the mine. By means of a telescope combined with the firing-key, these bearings can be taken with great accuracy. In some cases the ship herself is made to close the circuit in striking a rather complicated apparatus called a circuit-closer, which floats above each of the mines arranged on this system.

Of locomotive or offensive T. there are three classes: (1) The Whitehead fish torpedo, which has a fish-shaped

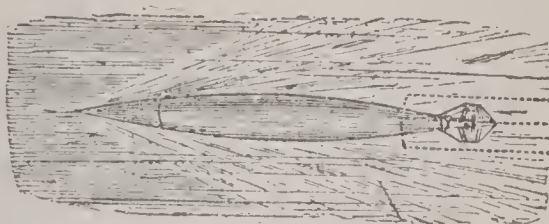


Fig. 3.—Whitehead Torpedo.

case, and is propelled in a straight line under water by means of a small screw-propeller driven by compressed air. It is discharged from a carriage on the deck of a man-of-war, and explodes on impact against the object aimed at. The secret of the construction has been sold by the inventor to the Austrian, Russian, and British navies. • (2) The Harvey 'towing torpedo,' which is towed out at an angle from the side of the attacking ship, and maneuvered so as to come in contact with the bottom of the ship attacked, and exploded either mechanically on contact, or by means of an electric fuse, the wire being inserted in the towing-line (these are now considered unavailable). (3) Boom or outrigger T., which are carried on long booms in the bows of boats or steam-launches, and thus driven against the side of a hostile ship and exploded (these also are now considered unavailable).

Torpedo-nets, for intercepting T., are steel-wire nettings suspended from long booms attached to a ship's side: protective for ships at anchor, but unavailable for ships under way.—See *Fraser's Magazine*, 1872; illustrated articles in the *Popular Science Review*, 1873-75; and Sleeman's *Torpedoes and Torpedo Warfare* (1880).

TORPID—TORQUAY.

TORPID, a. *tôr'pîd* [L. *torpidus*, benumbed, stupefied—from *torpĕrĕ*, to be still, to be stiff with frost: It. *torpido*]: benumbed; having lost the power of exertion and feeling; dull; inactive; dormant; stupid. **TORPIDLY**, ad. *-lĭ*. **TORPIDNESS**, n. *-nĕs*, or **TORPIDITY**, n. *tôr-pîd'ĭ-tĭ*, numbness; inactivity; sluggishness. **TORPESCENT**, a. *-pĕs'sĕnt* [L. *torpesco*, I become stiff]: becoming torpid. **TORPESCENCE**, n. *-sĕns*, torpidness; stupidity. **TORPIFY**, v. *tôr'pĭ-fĭ* [L. *faciō*, I make]: to make torpid. **TORPIFYING**, imp. **TORPIFIED**, pp. *-fĭd*. **TORPITUDE**, n. *-tŭd*, in *OE.*, torpidity. **TORPOR**, n. *-pŏr* [L.]: numbness; dulness; inactivity; deficient activity. **TORPORIFIC**, a. *-ĭf'ĭk* [*faciō*, I make]: tending to produce torpor.—**SYN.** of 'torpid': dull; inactive; sluggish; numb.

TORQUAY, *tawr-kă'*, or *tawr-kĕ'*: watering-place on the s. coast of Devon, England; occupying a cove on the n. side of Tor Bay, 23 m. s. of Exeter, 220 m. w.s.w. of London. The name is from the Celtic 'Tor' (q.v.), a hill, which occurs in the appellations of the neighboring peaks of Dartmoor (Hey Tor, Rippon Tor, etc.), and thence is given to the bay, and to the ancient parish of Tormoham or Tormohun, in which T. is situate. The monastery of Tor Abbey was founded in the 12th c.; but the town of T. is of recent origin. The bay is noted in history as the place where William of Orange landed 1688, and was often used as a naval rendezvous during the war with France; but till the beginning of the 19th c. T. was little more than an assemblage of fishermen's huts. About that time, the advantages of its climate—which are a peculiarly sheltered position, an equable temperature, and freedom from fogs—made it a resort for consumptive patients; and it soon attained a European celebrity, still almost unrivalled. The romantic hills and valleys of Tormoham and its environs are being rapidly overspread with villas, gardens, terraces, and rows of smaller dwellings. The original parish has been divided into four, and possesses six (Anglican) churches, one Rom. Cath., one Scotch Presb., and several dissenting chapels. A stone pier was built 1803, and the port is resorted to by colliers and small traders. The geological formation consists mainly of a range of transition limestone cliffs in strata much contorted, containing beautifully tinted marbles: there are also Old Red Sandstone and argillaceous shale. The scenery is exceedingly varied and picturesque. Besides the mildness of the winter, the vicinity of the sea in front, and of Dartmoor in the rear, greatly moderates the summer climate, so that, while the mean winter temperature is 44°, that of the summer is only 55°. Kent's Cavern, discovered 1824, and the Brixham Cave, discovered 1858, are rich in fossils, and are among the earliest places in the kingdom in which prehistoric human remains have been found.—Pop. of the urban sanitary district—Torquay and Tormoham—(1801) less than 1,000; (1881) 24,767.

TORQUE—TORRE DEL GRECO.

TORQUE, n. *törk*, or TORQUES, n. *tör'kwēz* [L. *torquēs*, a twisted neck-chain—from *torquēō*, I twist]: favorite ornament of the anc. Britons, consisting of a collar for the neck,



Torque, with manner of wearing it.—From sculptures on the monument of Vigna Amendola.

formed of a spirally twisted bar of gold, bent round almost to a circle, with the ends free, and terminating in hooks or sometimes in serpents. TORQUED, a. *törkt*, in *her.*, wreathed.

TORQUEMADA, *tor-kā-mā'thā*, TOMAS DE: inquisitor-general of Spain: about 1420–1498, Sep. 16; b. Torquemada, Spain. Having entered the order of Friars Preachers (Dominicans), he became prior of the convent of Santa Cruz in Segovia. He was chosen by Ferdinand and Isabella inquisitor-gen. for Castile and Leon 1483. T., though not the first Spanish inquisitor (the office dates from 1480), was the efficient organizer of the Holy Office in Spain. He was pres. of the Holy Office, and sat in the Consejo de la Suprema, or highest court of inquisition, assisted by six apostolical counselors, a procurator fiscal, three secretaries, a head-policeman, a treasurer, two reporters, and as many consultants as he might call. There were, besides the Consejo de la Suprema, four local tribunals. T. drew up a code of procedure for the Holy Office, consisting of 28 articles. Of these, arts. 1–10 deal with summonses to heretics to come forward and confess; 11–13 with penitents; 14–19 treat of the procedure of trial, including torture; 20 and 21 extend the jurisdiction of the Holy Office to the dead. The rest of the articles treat of matters of detail: see INQUISITION.

TORREADOR: see TOREADOR.

TORRE DEL GRECO, *tor'rā dēl grā'kō*: city of s. Italy, at the base of Vesuvius, 7 m. s.e. of Naples. The town is always new, being from time to time destroyed by the lava, and always raised again from its ruins by the attachment of its inhabitants to their native soil. The soil is fertile, producing fruit and wines similar to those of Greece. Its inhabitants are engaged in the tunny, oyster, and sardine fisheries. Mention is made of the town under its present name (the origin of which is unknown) as early as 1324. It suffered much in the eruption of 1631, and in

TORRE DELL' ANNUNZIATA—TORRES-VEDRAS.

that of 1794 it was almost totally destroyed by the lava. The earthquake of 1856, and the eruption of 1861, when the town was overwhelmed by vast showers of ashes, were equally destructive. But T. del G. has always risen again from its ruins.—Pop. (1881) 21,588.

TOR'RE DELL' ANNUNZIATA, *děł lân-nôn-zē-á'tá*: thriving town of s. Italy, on the Bay of Naples and on the s. base of Mt. Vesuvius, 13 m. s.e. of Naples. A fishery and a coasting-trade are carried on.—Pop. (1881) 20,060.

TORREFACTION: see under TORREFY.

TORREFY, v. *tör'rě-fī* [F. *torréfier*, to torrefy—from L. *torrēō*, I dry or burn; *facērě*, to make: Skr. *tarsha*, thirst]: to dry with heat; to roast or scorch; to parch or dry highly on a plate of heated metal or porcelain, as a drug. TOR'REFYING, imp. TOR'REFIED, pp. *-fīd*. TOR'REFAC'TION, n. *-fāk'shūn* [F.—L.]: the operation of drying or scorching by a fire; the state of being roasted or dried. TOR'REFIED-GRAIN, n. in *chem.*, cereals, e.g., barley, maize, rice, etc., which have been submitted for a short time to a relatively high temperature, by which the natural moisture of the grain is suddenly expelled, and in the act of escaping distends each kernel: it is sometimes called white malt, and is used for brewing purposes and for feeding cattle.

TORRENS, *tor'rěns*, LAKE: sometimes a brackish lake, at others merely a salt-marsh, in S. Australia; lat. 30° 11'—32° s.; long. 137° 30' e.; 30 m. n. of Spencer Gulf; length 130 m.; breadth 18 to 20 m.

TORRENT, n. *tör'rěnt* [F. *torrent*, a torrent—from L. *torrens* or *torren'tem*, burning—said of streams, raging, rushing—from *torrērě*, to burn]: a rapid-rushing stream, as lava or water; a stream of water running over a precipice or declivity; a very heavy fall, as of rain; a violent or rapid flow; a raging flood: ADJ. rolling or rushing in a rapid stream.

TORRES STRAIT, *tor'rěs*: water-passage between N. Australia and Papua or New Guinea; lat. 9° 20'—10° 40' n.; long. 142° 30' e.; discovered by Torres 1606. The channel is about 80 m. in width; and its navigation, though practicable, is rendered dangerous and difficult by innumerable shoals, reefs, and islands.

TORRES-VEDRAS, *tor'rěs vā'drās*: town of Estremadura, kingdom of Portugal; on the left bank of the Sizandro, about 30 m. n. of Lisbon. It has some trade in wine, but is notable solely from having given name to those famous lines of defense within which Wellington took refuge 1810, when he found it impossible to defend the frontier of Portugal against the French armies; and from which, in the year following, he issued on that career of slow and hard-won victory which ended in the expulsion of the French from the Peninsula. The *first* or outermost of these lines, extending from Alhandra, on the Tagus, to the mouth of the Sizandro, on the sea-coast, and following the windings of the hills, was 29 m. long; the *second* (and by far the most formidable) lay 6 to 10 m.

TORREY.

behind the first, stretching from Quintella, on the Tagus, to the mouth of the St. Lorenza, 24 m.; the *third*, s.w. of Lisbon, at the very mouth of the Tagus, was very short, being intended to cover a forced embarkation, if that had become necessary. The entire ground thus fortified was equal to 500 sq. miles. Pop. 3,300.

TORREY, *tôr'z*, CHARLES TURNER: anti-slavery martyr: 1813–1846, May 9; b. Scituate, Mass. He was educated at Yale Coll., was a Congl. minister for a time, but devoted his life to anti-slavery work in Md. He was imprisoned at Baltimore for reporting the doings of a convention of slave-holders 1843; and was sentenced to a long term in the state prison, 1844, for attempting to aid fugitive slaves. He died in prison of consumption brought on by hard usage. He had a semi-public funeral in Tremont Temple, Boston; and 'Torrey's blood crieth out' became a watchword of the abolitionists. He wrote, in prison, *Home, or the Pilgrim's Faith Revived*.

TORREY, JOHN, M.D., LL.D.: naturalist: 1796, Aug. 15—1873, Mar. 10; b. New York. He was educated in the public schools; studied medicine, and began practice in New York; entered the army as asst. surgeon 1824, and was assigned to duty at West Point, teaching chemistry, mineralogy, and geology. He was prof. of chemistry and botany in the New York Coll. of Physicians and Surgeons 1827–55, at the same time serving in a like capacity in Princeton Coll. and in the Univ. of the City of New York. He was govt. assayer at New York from 1853 till his death. Dr. T. was specially eminent as a botanist: his *Catalogue of Plants Growing Spontaneously within 30 m. of New York City* (1819) won for him eminent rank among botanists at home and abroad. His contributions to botanical science were numerous, and are of high authority. He was a trustee of Columbia Coll. (to which he presented, 1856, his herbarium of 50,000 specimens); was one of the founders of the New York Lyceum of Nat. Hist. (now New York Acad. of Science); was first pres. of the Torrey Botanical Club; and was one of the charter members of the National Acad. of Science.—See memoir of T., by Dr. Asa Gray, pub. in the *Biographical Memoirs* of the National Academy.

TORREY, JOSEPH, D.D.: Congregational minister: 1797, Feb. 2—1867, Nov. 26; b. Rowley, Mass. He was educated at Dartmouth Coll. and Andover Theol. Sem.; then for a time had a pastoral charge in Royalton, Vt. He was prof. of Greek and Latin in the Univ. of Vt. 1827–42, prof. of philosophy 1842–67, pres. of the univ. 1862–66. He was author of a *Theory of Fine Art*, and translator of Neander's *General History of the Christian Religion and Church*.

TORREY—TORRICELLI.

TOR'REY, JOSEPH WILLIAM: rajah in Borneo: 1828, Apr. 22—1884, Mar.: b. near Boston, Mass. He was for a short time a journalist in Boston; clerk in a mercantile house in Melbourne, Australia, 1853-57; editor of newspapers in Hong-Kong for a few years; then U. S. consul in Siam. He founded the Amer. Trading Co. in Borneo 1864, and as its manager was made by the sultan of Borneo rajah or gov. of the provinces Amboy and Mavoodu. After 14 yrs. of this governorship, T. became sec. to the U. S. legation to Siam; returned to Boston 1883, and shortly before his death received from the king of Siam an offer of appointment as his chief adviser.

TORREYA, *tôr'î-a* [named after John *Torrey*, botanist]: genus of *Coniferæ*, tribe *Taxææ*, comprising several species of evergreen exospermous trees native in N. America, China, and Japan. The leaves, which are linear or lanceolate, are in two ranks; flowers diœcious, the male flowers solitary, the female in twos or threes. The fruit is ovoid, drupaceous, and sometimes $1\frac{1}{2}$ in. long. The American species are *T. taxifolia* (Stink-cedar), of Florida, and *T. Californica* (California nutmeg).

TORRICELLI, *tor-rê-chêl'lê*, **EVANGELISTA:** Italian mathematician and philosopher: 1608, Oct. 15—1647, Oct. 25; b. Piancaldoli, in the Romagna, Italy. He was brought up by an uncle, who resided at Faenza, and who put him under the tuition of the Jesuits. When 20 years old, he was sent to Rome, and there pursued mathematical studies. Galileo's theories on force and motion, published a short time before, especially engaged his attention, and led to his publishing a *Trattato del Moto* (1643), and this led to his being invited to visit Galileo; and on the old philosopher's death, three months afterward, he was appointed to succeed Galileo in the chair of philosophy and mathematics at Florence. There he resided till his death. The discovery which will preserve T.'s name through all ages was the interpretation of the previously known fact that water will rise in a suction-pump to the height of only about 32 ft. The fact that water *could* be raised in a pump was expressed by the empirical law that 'nature abhors a vacuum,' and after the limit of 32 ft. was ascertained, the law was modified accordingly by Galileo. T., wishing to perform this experiment more conveniently, employed mercury, and found that nature's abhorrence of a vacuum varied for different fluids, and was represented by a column of fluid in height inversely proportional to its specific gravity; here, then, was an additional fact of great importance, containing the clew to the mystery; and T. was not long in hitting on the idea that the column of fluid was sustained by the pressure of the atmosphere on the open surface of fluid. The vacuum included in the mercurial barometer is known as the Torricellian Vacuum: see **BAROMETER**. T. also effected the quadrature of the cycloid, but in this was anticipated by Roberval.

TORRICELLIAN, a. *tôr'ri-chel'li-ăn*: of or discovered by *Torricelli*, a famous Italian philosopher and mathematician, born 1608, to whom is due the merit of discovering the principle of the barometer. **T. VACUUM**, the vacuum formed above the mercury in the barometer; any similar vacuum.

TORRID, a. *tôr'rid* [F. *torride*—from L. *torridus*, dried up, parched—from *torrêre*, to burn: It. *torrido*]: parched; dried with heat; burning; hot; sultry. **TORRIDNESS**, n. -*nês*, the state of being parched with heat. **TORRID ZONE**, the middle zone or belt of the earth's surface, extending on each side of the equator to the tropic of Cancer on the north, and the tropic of Capricorn on the south—so called from its high temperature.

TORRINGTON, *tôr'ing-ton*: town in Litchfield co., Conn.; on the Naugatuck river and the Naugatuck railroad; 28 m. w.-by-n. of Hartford. It contains the village of Wolcottville and the borough of Torrington, and has 1 private and 1 savings bank, a public library, 2 newspapers, 8 churches, and manufactures of machinery, hardware, nails, woolen goods, and plated-ware.—Pop. (1880) 3,327; (1890) town 6,048, borough, 4,283; (1900) 12,453.

TORRINGTON, *tôr'ing-ton*: municipal borough and market-town of the county of Devon, England; on an eminence sloping to the Torridge, 10 m. s.s.w. of Barnstaple. The inhabitants are employed in agriculture and glove-making; but the industry is inconsiderable.—Pop. (1881) 3,445; (1891) 3,436.

The name of T. emerges frequently during the great civil war; and the capture of the town by Fairfax 1646—on which occasion the church, with 200 prisoners and those who guarded them, was blown into the air by gunpowder—proved fatal to the king's cause in the west.

TORSADE, n. *tôr-sád'* [F., a twisted fringe—from L. *torquere*, to twist]: something rolled or twisted, as ribbons, the hair, etc.; a lady's hair arranged in loose fancy rolls.

TORSE, n. *tawrss* [F. *tors*, twisted—from L. *tortus*, pp. of *torquere*, to twist]: in *her.*, a wreath; a twisted scroll. **TORSEL**, n. -*sêl*, anything in a twisted form.

TORSE: see **TORSO**.

TORSEL, or **TORSAL**, n. *tawr'sêl* [etym. doubt.]: short beam under the end of a girder, where it rests on a brick wall.

TORSHOK, *tor-zhok'*: one of the most ancient towns in Russia, govt. of Tver; on the Tverza, in an undulating district, 309 m. s.e. of St. Petersburg. Leather and malt are the most important articles of manufacture; but the gold and silk embroideries of this town are known throughout the empire, and have obtained a European celebrity. There is extensive trade in corn, purchased at the landing-places of the Lower Volga, and transported to St. Petersburg by water: much of this corn is ground at T., and the flour exported. The town was founded in the 11th c.—Pop. (1884) 12,900; (1895) 14,814.

TORSION—TORSTENSOHN.

TORSION, n. *tör'shün* [F. *torsion*—from mid. L. *torsiō* or *torsiōnem*, a twisting or wringing—from L. *tortus*, pp. of *torquēre*, to twist]: the act of turning or twisting; the twisting or wrenching of a body by the action of a lateral force: in *surgery*, a method of checking arterial hemorrhage in certain cases, by drawing out the end of the artery for about a quarter of an inch with a pair of forceps, and then twisting it round several times until it cannot untwist itself. **TOR'SIONAL**, a. *-äl*, pertaining to torsion. **TOR'TILE**, a. *-tīl*, twisted; wreathed; coiled. **TORTIVE**, a. *-tīv*, twisted; wreathed. **TORSION BALANCE**, instrument invented by Coulomb, in which the force exerted by a twisted thread or filament to recover its original position, is made the means of measuring minute degrees of electrical and magnetical attraction: see **ELECTRICITY**. It has been used also in determining the mass and density of the earth (q.v.).

TORSK, n. *tör'sk* [Dan. *torsk*, a species of cod-fish]: the hake-fish, a kind of cod of the genus *Brosmius* (*B. vulgaris*), and family *Gadidæ* (q.v.), abundant in the n. Atlantic Ocean. The genus is characterized by a single long dorsal fin, and by having the vertical fins separate. The T. is 18 inches to 2 ft., rarely 3 ft. long; head small, body moderately elongated, one barbule under the chin, dorsal and anal fins distinct from the tail, though separated from it by a very short interval; tail rounded; head dusky; back and sides yellow, passing into white on the belly. It lives in deep water, approaching the land in shoals only at the spawning-time, very early in the year. It spawns among the sea-weed of the coast. It is caught in the same manner as cod, ling, etc.; and though rather firm and tough when fresh, is generally esteemed, when dried and salted, to be the best of stockfish. It is occasionally caught in the Firth of Forth, but belongs to more n. regions, and is very abundant in the Shetland Isles, the Faroes, on parts of the coast of Norway, and on the s. and w. coasts of Iceland: see **HAKE**.

TORSO, n. *tör'sō* [It. *torso*, the stump of a cabbage, a torso—from L. *thyrsus*; Gr. *thursos*, a stem]: the trunk of a statue; a statue deprived of head and limbs. Of such imperfect relics of classic art, the most famous is the *Torso of Hercules*, a masterpiece of manly beauty, discovered in the Campo del Fiore at the beginning of the 16th c., and placed, by order of Pope Julius II., in the Vatican.

TORSTENSOHN, *tor'stén-son*, **LEONARD**, Count of Ortala: the most enterprising and successful of the Swedish generals in the 'Thirty Years' War (q.v.): 1603, Aug. 17—1651, Apr. 7; b. Torstena. He became one of the royal pages 1618, and attended Gustavus Adolphus in his earlier campaigns. When Gustavus entered Germany 1630, T. was capt. of the body-guard; and his brilliant services at Breitenfeld, the Lech, and on other occasions, were rewarded with rapid promotion. Taken prisoner at the combat of Nuremberg (1632, Aug. 24), he was subjected to rigorous treatment, which ruined his health, so that on his exchange six months after, he returned to his post in the Swedish

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army a confirmed invalid; yet a vigorous mind and energetic character so overmastered bodily infirmity, that though reduced to the necessity of being always conveyed in a litter, he proved himself a most able officer under Bernhard of Weimar and Baner, the successors of Gustavus. In 1641, on the death of his former chief, the chivalrous Baner, T. was appointed to chief command of the Swedes in Germany. His military career was marked by brilliancy of conception, fertility of resource, resolute daring, and above all by extraordinary rapidity of execution. Having recruited and equipped his army, he invaded Silesia, routed the Austrians at Glogau and Schweidnitz, reduced most of Moravia, and being pressed back into Saxony by the Archduke Leopold and Piccolomini, gallantly turned on the multitude of his pursuers (1642, Nov. 2), and on the field of Breitenfeld, where Tilly's reputation for invincibility was cast down in the dust by Gustavus, inflicted a bloody defeat on the same adversaries; he then resumed his invasion, and laid Moravia and Austria under contribution. Ferdinand III., despairing of protecting his territories from T., negotiated with Christian IV. of Denmark to make a diversion by invading Sweden; but T., with characteristic promptitude, left Moravia 1643, Sep., traversed Saxony and the Upper Palatinate, burst into Holstein, and in less than six weeks subjugated the Danish mainland. The Austrians under Gallas followed in pursuit of him, to aid their allies, but arrived too late; and in attempting to coop him up in Holstein, were routed, and driven into Saxony; and again totally defeated (1644, Nov. 23) at Jüterbogk, in attempting to bar his return into Bohemia. Gallas was now deposed; but a combination of eminent generals, Montecuculi, Goertz, and others, was equally ineffective against the resistless Swede, who, by a great victory at Yankovitz (1645, Feb. 14), secured the navigation of the Danube, and the possession of the hereditary countries n. of it. The emperor, empress, and principal nobility now deserted the capital; the Saxons again joined the Swedes; and the Danes, routed at sea as well as on land, besought peace, which was granted (1645, Aug. 13). At this time, when a few more of T.'s weighty blows would have completely unseated the Hapsburg family, his gradually increasing ailments compelled him to resign the command to one greatly his inferior, and retire to Sweden, where he had a most distinguished reception from Queen Christina, was created a count, and appointed to various high offices.

TORT, n. *tört* [F. *tort*, wrong—from L. *tortus*, pp. of *torquēre*, to twist]: in *OE.*, mischief; calamity; in *law*, injury; damage; wrong. TERTIOUS, a. *tör'shūs*, in *OE.*, injurious; doing wrong; in *law*, implying damage.—*Tort*, in law, is violation of rights pertaining to every person, simply as person—e.g., of the right to personal security, to liberty, to property, to reputation, to service of a minor son or daughter, to companionship of a wife or husband, etc. Hence an injury to person or property or reputation is a T.; and special instances of T. are deceit, libel, conspiracy, malicious prosecution, false imprisonment, abduction and

TORTEAU—TORTOISE.

seduction, trespass, infringement of copyright or patent-right or trade-marks, etc. The difference between T. and crime is that T. is an injury to an individual, while crime is injury to the state. And T. is distinguished from an act in violation of contract, in the points following: (1) that persons jointly committing a T. may be in many cases held severally liable without right to contribution from their fellows; (2) that the right of action for T. ceases with death of either party; (3) that persons not qualified to make contracts are liable for their torts. An action of T. must rest on clear proof of the relation of cause and effect between the act and the injury. Further, action of T. generally falls if the plaintiff's negligence has in any degree contributed to the injury.

TORTEAU: see **ROUNDLE**.

TORTILE, TORTIVE: see under **TORSION**.

TORTILLA, n. *tôr-têl'yă* [Sp.]: a thin unleavened cake of maize-flour, baked on a heated plate or stone.

TORTOISE, n. *tôr'tis* [Prov. *tortesa*; F. *tortue*; Sp. *tortuga*—from mid. L. *tortuca*, a tortoise—from L. *tortus*, pp. of *torquere*, to twist]: a chelonian reptile of the genus *Testudo*, more or less flattened, covered with a very hard shell or case, into which it can draw its head and feet at will; in *anc. warfare*, a *Testudo* (q.v.).—*Tortoise* is a popular name, used interchangeably with *turtle*, for any chelonian, though more frequently applied to land species than to aquatic; yet *tortoise-shell* is from a marine species. The genera are many. In *Testudo*, to which the name is often applied, the carapace is of a single piece, bulged, and attached by the greater portion of its lateral edges to the *plastron* (see **CHELONIA**); the legs are very short; toes very short, and united to the nails, which are thick and conical, five on the fore-feet and four on the hind-feet. The species are numerous and widely distributed, inhabitants of warmer temperate and of tropical countries. They all feed on vegetable food. Several species are found around the Mediterranean. The most common of these is the GREEK T. (*T. Græca*), which attains a length of 12 inches, and has a broad and equally bulged carapace; the scales of which are granulated in the centre, striated on the margins, and spotted or marbled with black and yellow. Of this species, an individual is mentioned by White, in *Natural History of Selborne*. It lives to a very great age, 100 years or more, as probably do all the other species, and spends the winter in a dormant state, as do all those which are not inhabitants of tropical climates; selecting a place of hibernation or preparing it by scooping a hole in the earth. During the heat of summer it feeds voraciously. The love-season, which is in the beginning of summer, is one of great activity; and tortoises express their amorous desires by striking their shells against those of their mates. The Greek T. is used for food in parts of S. Europe. The flesh of all species of T. appears to be good for food, and the eggs of all are regarded as delicacies. A very large species is the Indian T. (*T. Indica*), if several species are

TORTOISE PLANT—TORTONA.

not confounded under that name. It has been found on the coast of Coromandel four ft. and a half in length, its bulge being about 14 inches. It is particularly abundant in the Galapago Islands, and has even been supposed by Darwin to be originally a native of them, and to have been diffused thence by the buccaneers over other tropical regions. The Galapago T. is often 200 lbs. in weight. Its flesh is of excellent quality. It forms tracks from the arid districts near the shore to the high districts of the islands, where there are springs, for the purpose of drinking: it swallows a very large quantity of water at a time. The numbers of tortoises in some tropical and subtropical countries are very great.

For N. American species, see TURTLE.

Tortoises show very little intelligence; they are, however, capable of recognizing the hand that feeds them.

TORTOISE PLANT: see HOTTENTOT'S BREAD.

TORTOISE-SHELL: the large scales of the carapace or shield of a species of sea-turtle, *Chelonia imbricata* and *Testudo imbricata* of several authors—*Caretta imbricata* of Dr. Gray—found in the Indian Ocean, Amboyna, New Guinea, Seychelles, Havana, and the Red Sea, etc., and manufactured into various articles of ornament and use. T.-S. is so called because formerly the order of animals to which it belongs was little known, and all were confounded under the general name Tortoises. A remarkable peculiarity in this species is the arrangement of the 13 plates forming the carapace, which, instead of being joined together by their edges, so as to make apparently one piece, are thinned off at their edges, and overlap each other like the tiles of a roof. They vary in size according to the part of the shield that they occupy. The larger are sometimes 12 to 18 inches long, by 6 inches broad; the thickness rarely exceeds the eighth of an inch. This material has beautiful mottled color, and is semi-transparent. A remarkable quality, which greatly increases the usefulness of T.-S. for ornamental purposes, is its property of being easily softened by a heat equal to that of boiling water, and of retaining any form when cold which has been given to it when heated. Pieces can also be welded together by pressure of hot irons. Its chief use is in making combs for the hair; but it is used also for inlaying small pieces of ornamental furniture and fancy objects.

TORTO'LA: see VIRGIN ISLANDS.

TORTONA, *tor-tō nâ* (anc. *Antilia*, or *Dertona*): town of n. Italy, province of Alessandria, on the right bank of the Scrivia (a small river which flows n. to join the Po), and 13 m. e. of Alessandria, with which it is connected by railway. The principal buildings are the *Duomo* and church of San Francesco. T. has manufactures of silk, leather, hats, etc. It was a notable place in the middle ages—the old walls, and the ruins of a castle in which Frederick Barbarossa lived, being a relic of those turbulent times. Its fortifications were destroyed by the French, after Marengo, 1799.—Pop. (1881) 9,023.

TORTOSA—TORTURE.

TORTOSA, *tor-tō'sā* (anc. *Dertosa*): old fortified town of Spain, province of Tarragona; picturesquely situated on a sloping eminence overlooking the Ebro, about 22 m. from the mouth of that river. The streets are narrow, and the place has altogether a dull look. Some inconsiderable manufactures are carried on, and the sturgeon and lamprey fisheries afford employment.—Pop. (1887) 25,192.

TORTUGAS, *tor-tō'gas* (Sp., Turtles): group of ten islets or keys, called also the Dry Tortugas, belonging to the United States: at the entrance of the Gulf of Mexico, 120 m. w.s.w. of Cape Sable, s. point of Florida. They are low coral islets, partly covered with mangrove bushes. There is a light-house on Bush Key; and on the same island stands Fort Jefferson, garrisoned by about 100 men. During the civil war, the fort was used as a penal station for Confederate prisoners.

TORTUOUS, a. *tōr'tū-ŭs*, or **TOR'TUOSE**, a. *-ōs* [L. *tortuosus*, full of crooks or turns—from *tortus*, twisted; *torquēre*, to twist: It. *tortuoso*: F. *tortueux*]: twisted; winding; having many crooks and turns; crooked; disingenuous; deceitful, as a *tortuous* policy. **TOR'TUOUSLY**, ad. *-lī*. **TOR'TUOUSNESS**, n. *-nēs*, or **TOR'TUOSITY**, n. *-ōs'ī-tī*, state of being crooked and winding; wreath; flexure.

TORTURE, n. *tōr'tūr* or *-chūr* [F. *torture*—from mid. L. *tortūra*, torture—from L. *tortus*, pp. of *torquēre*, to twist]: extreme pain; anguish of body or mind; agony; severe pain inflicted as a punishment, or for the purpose of extorting a confession: V. to pain extremely; to put to the rack; to torment; to harass; to vex. **TOR'TURING**, imp.: ADJ. tormenting; keeping on the rack; vexing. **TOR'TURED**, pp. *-tūrd* or *-chūrd*. **TOR'TURER**, n. *-tūr-rēr*, one who tortures. **TOR'TURINGLY**, ad. *-rīng-lī*.—*Torture* has been (and still is) largely used in many countries as a judicial instrument for extracting evidence from unwilling witnesses, or confessions from accused persons. In ancient Athens, slaves were examined by T., and their evidence seems on this account to have been deemed more valuable than that of freemen. Any one might offer his own slave, or demand that of his opponent, to be examined by T.; and it was a presumption against any one that he refused to give up his slave for that purpose. No free Athenian could be examined by T., but T. seems to have been used occasionally in executing criminals. Under the Roman republic, only slaves could be tortured, and, as a general rule, they could not be tortured to establish their masters' guilt. Under the empire, T., besides being much used in examining slaves, was occasionally inflicted even on freemen, to extract evidence of the crime of *læsæ majestatis*. Cicero and other enlightened Romans wholly condemned its use. Until the 13th c. T. seems to have been unknown to the canon law; about that period, the Roman treason-law began to be adapted to heresy as *crimen læsæ majestatis Divinæ*. A decree of Pope Innocent IV., 1282, calling on civil magistrates to put persons accused of heresy to the T., to elicit confessions against themselves and others, was

TORTURE.

probably the earliest instance of ecclesiastical sanction for this mode of examination. Afterward T. was largely employed by the inquisitors (see INQUISITION).

From the civil law, T. became a part of the legal system of most European countries. It was adopted early and largely by the Italian municipalities. In Germany, elaborate apparatus for its infliction existed, not only in the dungeons of the feudal castles, but in the vaults beneath the town-halls of Nuremberg and Ratisbon, where the various implements used are yet seen. It continued in the prisons of Germany when they were visited by Howard 1770. In France it was part of the judicial system till 1789; in Scotland it was in frequent use after the Restoration, and was only abolished by 7 Anne, c. 21, s. 5.

The use of T. seems always to have been repugnant to the genius of the law of England: though occasionally used by an exercise of prerogative, it may be doubted whether it was ever recognized as lawful in the ordinary administration of justice. Its first recorded use is in 1310, in aid of the ecclesiastical law, during the struggle between Pope Clement V. and the Templars. Edward II., when applied to to sanction the infliction of T. by the inquisitors in the case of certain Templars accused of heresy and apostasy, at first refused; but on remonstrance by Pope Clement, he referred the matter to the council; and on recommendation of the council, the inquisitors were authorized to put the accused to the T., but without mutilation or serious injury to the person, or effusion of blood. During the Tudor period, the council assumed the power of directing torture-warrants to the lieut. of the Tower and other officers, against state prisoners and occasionally also against persons accused of other serious crimes; and similar warrants were at times issued under the sign-manual. Under James I. and Charles I., T. was less frequent, and only in state trials. In 1628, in the case of Felton, assassin of the Duke of Buckingham, the judges declared the examination of the accused by T., for discovering his accomplices, to be illegal. T. was inflicted for the last time in England 1640, May. It is now disused in all countries of Europe, and is universally acknowledged to have been a most unsatisfactory mode of procuring true testimony, often leading the innocent, from mere weakness of body, to plead guilty.

The instruments of judicial T. have been various. The most celebrated is the Rack, an oblong horizontal frame, on which the accused was stretched, while cords attached to his legs and arms were gradually strained by a lever or windlass, an operation which, when carried to extreme severity, dislocated the joints of the wrists and ankles. The rack is as old as the 2d c. in s. Europe, but is said to have been unknown in England until introduced into the Tower by the Duke of Exeter, constable of the Tower, whence it acquired the name 'Duke of Exeter's Daughter.' In Germany the rack was sometimes furnished with a roller, armed with spikes, rounded off, over which the sufferer was drawn forward and backward. A vertical rack also was in use in that country. The person subjected to it was

TORULA—TORY.

raised to the roof by a rope attached to his arms, which were bound behind his back; and two heavy stones having been attached to his feet, the rope was loosened so as to let him fall with a jerk to within a few inches of the ground. Among the lesser tortures were the Thumbikins, Boots, Pincers, and Manacles; and in England an instrument called the Scavenger's (properly Skeffington's) Daughter, the invention of Sir W. Skeffington, lieut. of the Tower in the reign of Henry VIII.

TORULA, n. *tōr'ū-lă* [L. *torulus*, a tuft of hair—from *torus*, a bulge]: genus of fungi.—**TOR'ULA CEREVISIÆ**, the yeast-plant, one of the fungi connected with the process of fermentation (see YEAST). This plant (*Saccharomyces cerevisiæ*) may be readily observed by examining a little yeast under the microscope, when it will be seen in the form of round or oval corpuscles (cells), averaging $\frac{1}{3000}$ of an inch in diameter, and many having smaller corpuscles in their interior. They grow by protrusion of gemmules, and germinate sometimes on one and sometimes on several spots of the primitive fungus cells. These shoots throwing off new gemmules, the yeast-plant gradually forms single or branching rows of oblong cells, connected like beads. This peculiar arrangement of the cells, and the fact that they are not acted on by acetic acid, is characteristic of the plant.

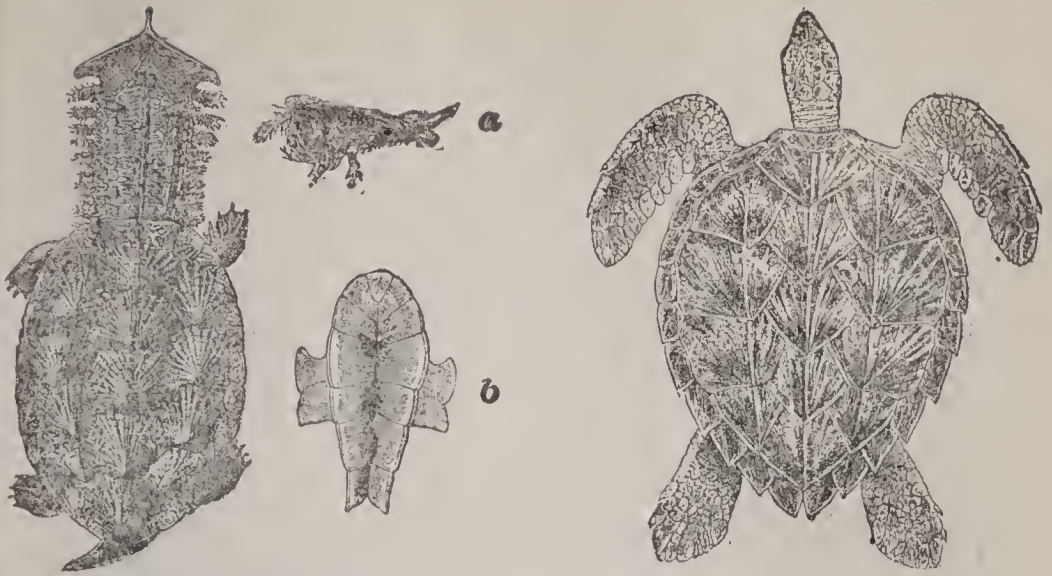
This fungus exists in the saccharine urine of *diabetes melitus*, after it has been discharged for 24 hours or longer, and its appearance in urine within a day or two is sufficient to lead to the suspicion of the presence of sugar. It is frequent likewise in vomited matters and in fecal evacuations; and, wherever found, it is indicative that the fluid is in a state of saccharine fermentation.

As fungi more or less closely resembling the yeast-plant often occur in non-saccharine urine that has stood for some days, the assumed presence of the *T. cerevisiæ* must not be taken as proof of the presence of sugar, though it affords a strong hint for testing for that substance.

TORULOSE: see under **TORUS**.

TORUS, n. *tō'rūs*, or **TORÉ**, n. *tōr* [L. *torus*, a thing swelling out, a bulge: It. *toro*: F. *tore*]: in *arch.*, a large convex molding in the bases of columns, the profile of which is semicircular (see COLUMN): in *bot.*, the axis on which all the parts of the floral whorls within the calyx are seated. **TORULOSE**, a. *tōr'ū-lōs'*, or **TOR'ULOUS**, a. *-ū-lūs*, in *bot.*, having successive rounded swellings, as the pods of some cruciferous plants; swollen and constricted alternately.

TORY, n. *tō'rĭ* [Gael. and Ir. *taobh-righ*, pronounced somewhat like *tō'rē* or *tū'rē*, the king's side—from *taobh*, side or part; *righ*, king: said by others to be from the Irish robber word *toree*, give me—i.e., your money—subsequently applied to Rom. Cath. outlaws in Ireland, then to those who refused to concur in excluding a Rom. Cath. prince from the throne]: originally, an Irish robber or outlaw; in *British politics*, a term opposed to *whig*—applied first in

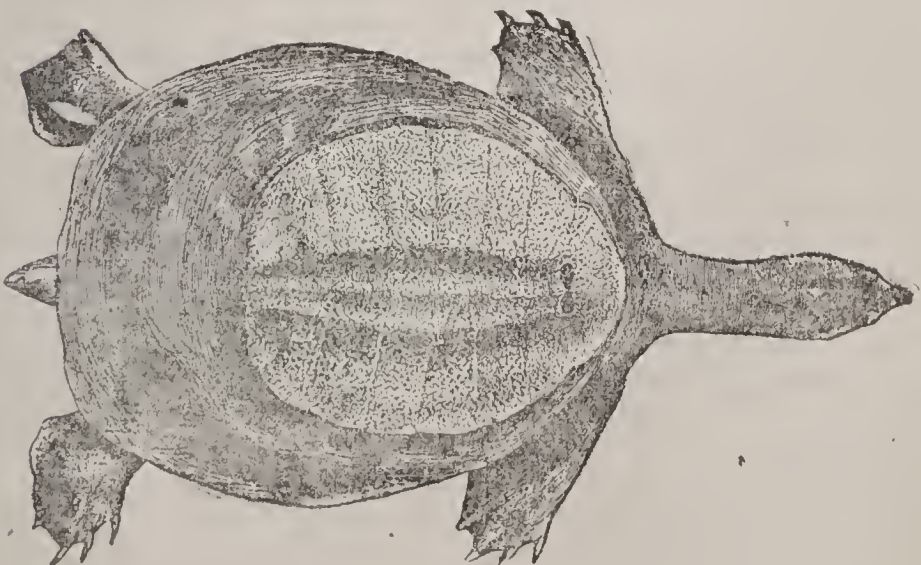


The Matamata, with side-view of head, *a*, and separate view of plastron, *b*.

Hawksbill Turtle.



Alligator Terrapin.



Upper View of the Turtle of the Euphrates.

TOSE—TOT.

1680 as a term of reproach to the members of the court party, which refused to concur in the measure introduced by the whigs for exclusion of the Duke of York, a Rom. Cath. prince, from the throne; an adherent of the party which maintains certain traditional constitutional principles of public policy; the political successors of the *tories* are now commonly known as *conservatives*: in the *United States*, a member of the British party during the revolutionary period; a loyalist. The estates of tories were in many instances confiscated; and many tories settled in Canada and other Brit. colonies. **TORY**, a. of or pertaining to the tories. **TORYISM**, n. *tō'rĭ-izm*, principles of the tories.

TOSE, v. *tōz* [see **TEASE** 1, and **TOUSE**]: in *OE.*, to tease, as wool.

TOSHACH, *tōsh'ăch* [Celtic, 'captain']: among Celtic nations, the military leader of a clan or tribe, whose functions were in early times always separated from those of the supreme judicial officer. When the office of T., originally elective, became hereditary, according to the principle of divided authority characteristic of Celtic communities, it remained permanently in the eldest cadet of the clan. See **TANISTRY**.

TOSS, v. *tōs* [W. *tosio*, to jerk; *tos*, a toss, a jerk: Norw. *tossa*; Low Ger. *tōsen*, to let drop, to scatter in small portions]: to throw with the hand; to throw upward; to lift or throw up with a sudden or violent motion; to fling; to pitch; to make restless; to disquiet; to roll and tumble; to be in violent commotion: N. act of tossing; affected manner of raising the head. **Tossing**, imp.: N. the act of throwing upward; a rising and falling suddenly; a rolling and tumbling. **Tossed**, pp. *tōst*. **Toss'er**, n. *-ēr*, one who tosses. **To Toss Off**, to drink off without ceremony or delay; to make short work of. **To Toss the Oars**, to raise them perpendicularly with their blades upward, as a salute. **To Toss Up**, to throw a coin up into the air and bet on which side it will fall. **A Toss-Up**, an uncertainty. **To Toss Hay**, to throw up and turn it over. **Toss-pot**, n. a toper; a drunkard. **Tossed by a Bull**, thrown up by his horns.

TOT, v. *tōt* [the syllables *tat*, *tot*, *tit*, are used in forming words signifying broken sound, then short abrupt movement, a small quantity: Icel. *tottr*, little: Norw. *tot*, a murmur: Icel. *titra*, to shiver: Dan. *tot*, a flock of wool]: anything small, as a term of endearment; anything small of its kind. **To Tot About**, to move about with short steps, as a child attempting to walk, or a feeble old person. **Tot'ty**, or **Tottie**, a. *tōt tĭ*, unsteady; dizzy; small. **Tot'ter**, v. *-tēr*, to shake as if about to fall; to be unsteady; to shake. **Tot'tering**, imp.: **Adj.** threatening to fall. **Tot'tered**, pp. *-tērd*. **Tot'terily**, ad. *-lĭ*. **Tot'terer**, n. *-ēr*, one who totters.

TOT, v. *tōt* [contr. of **TOTAL**]: *familiarly*, with *up*, to sum; add; reckon, as to *tot up* the bill.

TOTAL—TOTAL ABSTINENCE.

TOTAL, a. *tō'tāl* [F. *total*—from mid. L. *totālīs*—from L. *totus*, all, whole: It. *totale*]: whole; complete; entire; undivided; absolute: N. the whole; the complete sum or amount. **To'TALLY**, ad. *-lī*, wholly; completely. **TOTALITY**, n. *tō-tāl'ī-tī*, the whole sum or amount; wholeness; completeness. **IN TOTO**, *tō'tō* [L.]: in the whole; altogether. —**SYN.** of 'total, a.': whole; entire; perfect; integral; complete.

TOTAL ABSTINENCE FROM ALCOHOLIC BEVERAGES: one of the steps in the movement for suppression of intemperance. This reform has passed, in America, through a series of well-defined stages. The first temperance societies (see **TEMPERANCE MOVEMENT**) were organized to discourage the 'too free use' of ardent spirits. In a brief time, entire abstinence from ardent spirits was urged. Later still (1836), the reformatory force of the 'moderation' movement having apparently spent itself, the advance was made to T. A. from all intoxicating drinks (including beer, ale, wine, and cider). The next stage (1840–44) may be said to have begun with the Washingtonian movement, the first general effort to reclaim drunkards. Then (1844–48) came the local option movement, in which the power of law was invoked on an extended scale; and this was followed (1851–56) by the era of Prohibition (q.v.). In each case the change made was to a more radical basis, and was made not from mere choice, but was apparently forced on the leaders of the movement by what they felt to be its logical and historical development.

History.—The T. A. movement was fairly inaugurated in 1836, when the National Temperance Convention, assembled in Saratoga Springs, N. Y., adopted, after much warm discussion, a resolution in favor of 'total abstinence from all intoxicating liquor as a beverage' (Dorchester's *Liquor Problem in All Ages*, 264). Prior to this, many local and even state societies had placed themselves on the same basis, and the action of the National Convention was the result of several years of agitation. The movement, by this advance, aroused new and formidable opposition. Not only was that of the makers, sellers, and drinkers of wines, beer, and cider, incurred, but a number of the friends of temperance regarded the step as extreme and likely to produce an unfavorable reaction. This antagonism appears, however, to have been confined to individuals, the temperance organizations as a rule indorsing the position without further hesitation. At this time the number of temperance societies in the United States had reached about 8,000, with estimated enrolment of 1,500,000 (*Permanent Temperance Documents*, 474). In the period 1838–40, according to Dorchester, 'the tide of reform' 'came nearly to a stand.' Evidence is lacking as to the reason of this; but it was due probably to the new and strong opposition engendered, and perhaps to hesitation and distrust of the wisdom of the new basis adopted. In Ireland, however, the new movement, under the inspiring leadership of Father Mathew, advanced with rapid strides, about 9,000 persons enrolling their names in the first nine months of

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his labors (Burns's *Temperance History*, I. 139); and in 1840 the most remarkable uprising yet witnessed—the Washingtonian movement—began in the United States. This movement had its beginning in a public-house (Chase's Tavern) in Baltimore, being started by a club of six tipplers, who for some reason suddenly pledged each other to T. A., and organized the Washington Society, 1840, Apr. 2. In one year's time the society numbered in its membership 1,000 reformed drinkers. In 1841 and 2, immense meetings were held in the largest cities, and thousands were pledged. In the three years during which the movement lasted, it is estimated that 600,000 drunkards were induced to reform, 'of whom 450,000 returned to their old habit.' (*Liquor Problem in All Ages*, 271). The movement was emotional rather than educational. It aroused the country, however, as nothing else had done, and resulted in the formation of secret temperance societies, which have been ever since permanent educational organizations. To this movement was due the reformation of John B. Gough (q.v.), who at once, 1842, began his wonderful career as a temperance apostle, a career which lasted until his death 1886.

Before the Washingtonian movement had ended, the energies of the temperance advocates had been directed, with increasing vigor, toward the laws relating to the liquor traffic. While the activities of 30 years had achieved results not inconsiderable, it was felt and acknowledged that, in comparison with the evil remaining, those results were very unsatisfactory. Almost from the beginning, strong protests against the license laws were uttered, and in 1844 these protests had assumed the form of organized action. From 1844 to the opening of the civil war, the aggressive work of the temperance advocates in the United States was directed chiefly toward the repeal of those laws and a reversal of the attitude of government from one of protection for the business to one of prohibition (see PROHIBITION). The educative work was continued, probably even intensified; but it no longer stopped at the duty of the individual in relation to his personal habits: it went farther, and arraigned the state and the citizen as participators in the responsibility.

The years of the civil war, the five years preceding, and the five subsequent years, composed a retrograde period. In the agitated condition of the country before and during the war, other issues likely to divide the support of the government were remanded to the rear. The moral and social demoralizations incident to a great war, the need of large revenues and the discovery of the ease with which they could be raised by taxes on liquor, the rapid growth in the brewing industry and the organization of its promoters, and the rapid influx of foreign immigrants—all conduced to the reaction. The close of the war found most of the prohibitory laws either repealed or unenforced. The mind of the public, relieved of the stress and strain of war, was soon called to grapple with almost equally important problems of reconstruction; and while the temperance activities were at no time suspended, they were more

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than counterbalanced by adverse influences. This retrograde movement received its first decided check toward the close of 1873 by the Women's Crusade. This was a remarkable movement inspired by Dr. Dio Lewis, which began in Hillsboro, O., and spread into a large number of states, creating for a time intense excitement. Women of social influence and refinement organized themselves into praying bands which went to saloon after saloon, not forgetting drug-stores and taverns, and endeavored by prayer and persuasion to secure from the seller of intoxicating drink a pledge to cease the sale. Out of this uprising, necessarily transient, but powerful in its influence, was born the Woman's Christian Temperance Union (q.v.), probably the most powerful temperance soc. ever formed. About the same time (1874), the Red Ribbon movement (afterward the Blue Ribbon movement) was inaugurated in Maine. This was a repetition in most respects of the Washingtonian movement. The principal figures in it were Dr. Henry A. Reynolds, a reformed drinker, and Francis Murphy, a reformed drinker and saloon-keeper. This reform work was kept alive by reform clubs, by the secret temperance societies, and by the gospel temperance meetings held by the Woman's Christian Temperance Unions, and is at the present time an important branch of the temperance work. In 1880 the Prohibition movement again set in (see PROHIBITION).

Total Abstinence Societies.—The more important of these are the Independent Order of Good Templars, organized 1851, and numbering (1890) about 12,000 lodges and 600,000 members in America, Europe, Asia, Africa, and Australia; the Sons of Temperance, organized 1842, and numbering (1890) about 1,600 subordinate divisions and 85,000 members in N. America; the National Temperance Soc. and Publication House, organized 1865; the National Woman's Christian Temperance Union, organized 1874, with a membership (1890) of about 150,000, not including the juvenile department; the World's Woman's Christian Temperance Union, organized 1883; the Catholic Total Abstinence Union, organized 1872, and enrolling (1890) about 56,000 members. In addition, there is in most of the states some form of a state temperance society, and there are many societies organized in connection with churches.

Total Abstinence in Other Countries.—The impetus given to T. A. by Father Mathew, in Ireland, exerted an immediate effect throughout the United Kingdom. Societies had been organized some years before (1830-1) in Ulster, Glasgow, Bradford, and London; but, like the societies in America till that time, were based on 'moderation.' The first T. A. soc. was organized in the town of Preston, Lancashire, England, 1832, Joseph Livesey being the prime mover. Two years later 150,000 members were enrolled in similar societies. By 1841 the temperance movement had placed itself, throughout the United Kingdom, on the T. A. basis. At the World's Temperance Convention, London 1846, it was estimated that there were connected

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with T. A. societies, in America, 7,000,000 members; in Ireland, 5,000,000; in England and Scotland, 3,000,000; on the continent of Europe and in the Brit. colonies, 3,000,000. The work in the United Kingdom has made steady progress, but on the educative rather than the political or legislative line. The principal T. A. societies are: National Temperance League, organized 1856; British Women's Temperance Assoc., 1876; Irish Temperance League, 1858; Scottish Temperance League, 1844; the Independent Order of Rechabites, 1835; the Good Templars; the Sons of Temperance; and the United Temperance Order. The juvenile organizations are the juvenile branch of Good Templars and the United Kingdom Band of Hope Union. The United Kingdom Alliance, organized 1853 for legislative work, has of late years been very active and influential, chiefly in securing the passage by parliament of the 'local veto' bill, giving to localities the right to determine whether or not licenses for public houses shall be issued—similar to the local option laws of the United States. It does not require T. A. of its members, but its teachings and its legislative demands are predicated on the T. A. principle. The Church of England Temperance Soc. has two sections, one consisting of total abstainers, the other of total abstainers and 'moderate' drinkers who are willing to co-operate for social and legislative purposes.

Argument for Total Abstinence.—This is twofold—moral and scientific: the former argument rests, however, to a considerable degree on the latter. The effects of alcohol, it is claimed, on the human system are so cumulative and so deceptive that there is but one safe rule to be followed or taught. While many may be able to drink sparingly and with self-restraint, it is pointed out that no individual has a sufficient knowledge of his own physical nature to be able to decide whether or not he can drink without in time becoming bound in the chains of habit. Great emphasis is laid on the evil effects which the example of 'moderate' drinking is believed to exert upon the young; and in this respect the influence of the 'moderate' drinker is pointed to as more dangerous (because more attractive) than that of the inebriate. The teaching of Paul (I Cor. viii. 13) is cited in this connection as obligatory—in principle—on the Christian to-day: this citation, however, has called forth strong dissent. In further opposition to this view, the Bible is quoted to show that alcoholic wine was drunk by Christ and his followers, and was often used in the Old Testament to typify a blessing. In response the theory has been advanced that two kinds of wine are spoken of in the Scriptures, one being the fermented, the other the unfermented juice of the grape, the terms *yayin* (Hebrew) and *oinos* (Greek) being generic terms, covering both kinds of wine, and the term *tirosk* (Hebrew) being a specific term used to designate unfermented wine only: this also is strongly denied by many eminent biblical scholars. Many, however, who reject the two-wine theory advocate T. A., claiming that Christ's diet is in no respect obligatory on Christians, and that,

whatever may have been the social or other effects of such a diet in that day, the evil consequences resulting from it now render T. A. obligatory on those who would follow the spirit of Christ's teachings. This view is very largely accepted in most of the evangelical denominations in America.

The scientific argument is, in brief, that alcohol is an irritant poison which serves no useful purpose in any healthy system. The controversy on this point dates back to 1842, when Baron Liebig, in his classification of foods, placed alcohol in the list of respiratory or heat-producing foods, expressly stating that it could not be a structure-building food. This classification was accepted until, 30 years later, Lallemand and Perrin, of France, claimed to have demonstrated by a series of experiments that alcohol was eliminated from the human system unchanged by combustion or any other process; and that none of its derivatives, such as aldehyde and acetic acid, such as would be produced by combustion, could be traced in the system. Their conclusion that alcohol was an intruder in the body was in turn accepted until the experiments of Austie, Thudichum, Schulinus, and Dupré, which seemed to indicate that but a portion of the alcohol was eliminated unchanged, the rest disappearing in the system and presumably being used in heat-production. Later still, however, Dr. Benjamin W. Richardson (q.v.), following on the same track that Dr. N. S. Davis, of Chicago, had pursued, by a series of elaborate experiments seemed to show that the result from the use of alcohol was a lowering of the temperature, instead of the contrary. Since then the ground of dispute has shifted. It is now claimed that alcohol, while not a direct food, serves the same purpose indirectly by retarding the destruction of tissues which is one of the invariable effects of vital processes. This, again, is disputed. It is urged that, while the elimination of the waste tissue is obviously retarded, its destruction is not shown to be retarded; and that in any event, since both the destruction and the elimination of these tissues are a natural part of the vital process, the retardation of either would be injurious, not beneficial. So far as any results have been reached from the controversy, they may be safely said to be comprised in the statement by Dr. Willard Parker that alcohol has no place in a *healthy* body. Even its defenders, moreover, claim that it is of dietetic benefit only when taken in doses much smaller in amount than that contained in an ordinary 'drink' of anything but very light wines or beers. None of the T. A. societies, it may be added, pledge their members against the use of alcohol or alcoholic liquors as a medicine, taken on the advice of a physician.—See ALCOHOL: FOOD AND DRINK.

Another argument of considerable force is derived in behalf of T. A. from the results of experience on the part of life insurance and mutual benefit societies—the rate of mortality among total abstainers being materially less than

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that among 'moderate' drinkers.—See **TEMPERANCE MOVEMENT**: also references under it.

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TOTEM, n. *tō'tēm* [corruption of Indian name *dodaim*]: among the Indians of N. America and other barbarous tribes, the name, symbol, or cognizance of a tribe, usually a clan-animal. **TO'TEMISM**, n. *-izm*, the system of describing tribes or families by the *totem* or animal whose name and symbol they bear; use of the totem as a clan or tribal symbol. **TOTEMIC**, a. *tō-tēm'ik*, pert. to.—The *Totem* is the animal, vegetable, or thing which is an object of veneration or worship to a barbarous tribe—in a certain sense the *god* of the tribe. From the tribe being commonly named after its T., the word frequently denotes merely the tribal name. Numerous tribes with totems exist in America, Australia, the s. Pacific islands, and central Asia; and there are indications that such tribes were numerous even in Europe among ancient races of the Indo-European stock.

Among the Amer. Indians, the following are totems of tribes existing or known to have existed: the Wolf, Bear, Beaver, Turtle, Deer, Snipe, Heron, Hawk, Crane, Duck, Loon, Turkey, Musk-rat, Sable, Pike, Cat-fish, Sturgeon, Carp, Buffalo, Elk, Reindeer, Eagle, Hare, Rabbit, and Snake; the Reed-grass, Sand, Water, Rock, and Tobacco plant. Among the tribes of native Australians, the totems are similarly selected mostly from the fauna of the country. The totems of the Kirghiz tribes of central Asia all are animals to which (in explanation of their reverence for them) the tribes trace back their descent.

It has been suggested that the explanation of the crests and emblems of the now disrupted tribes and clans of Europe is to be found in the supposition that the creature or thing on the crest was originally the T. of the clan or tribe. On this supposition, the widespread clan Chattan or Cattan, e.g., which is represented in the Scotch Highlands, and can be traced in France, Germany, and Egypt, would be recognized as the *Cat* tribe, the cat having been formerly its T., as it still is its crest or emblem. It has also been suggested that many of the mythical traditions of ancient Greece admit of a reasonable meaning, if we suppose that there were anciently in Greece tribes with

T^HOTHER—TOTO CŒLO.

totems—bull, boar, and lion tribes; snake, ant, and dragon tribes. This suggestion awaits further investigation. As an instance of success in tracing back a T. to ancient times and widely separated countries, it has been noted that there are numerous existing snake-tribes in America and in the South Sea islands; while there is certainly some evidence that the snake was the T. of very many and powerful ancient peoples. Its worship can be traced among Semitic races; there are traces of it in the traditions of the Pelasgi; there are proofs of it among the Celts; and the most magnificent ecclesiastical architecture in the world is that of the Nagas—serpent-worshippers in Cambodia—still standing, and only recently brought to light. The inference may be that, in the period of primitive animal-worship, when the serpent was deemed of so much importance, other animals also had their worshippers; and that snake-tribes were not the only tribes with animal totems in those times, as they certainly are not the only ones among existing primitive peoples. The word *totem*, as was pointed out by Max Müller, exists in no Indian language. In Algonquin, *otem* is the possessive of *ote*, which is preceded by a personal article—thus, *kitotem*, ‘thy family mark;’ *nindotem*, ‘my family mark.’—See recent anthropological literature, including works of Tylor, Lubbock, and Herbert Spencer; also *The Origin of Primitive Superstitions*, by R. M. Dorman (Philadelphia 1881).

T^HOTHER, *tūth'ér*: contr. of *the other*.

TOTIDEM VERBIS, phrase, *tōt'î-dēm vēr'bīs* [L.]: in so many words; in the very words.

TOTIES QUOTIES, phrase, *tō'tī-ēz kwō'tī-ēz* [L.]: as often as one, so often the other.

TOTIPALMATÆ, n. plu. *tō'tī-pāl-mā'tē* [L. *totus*, whole; *palma*, the palm of the hand]: in *zool.*, group of wading birds, of the order *Palmipedes*, having the hallux united to the other toes by a membrane in such a manner that the feet are completely webbed; cormorants, pelicans, gannets, and frigate-birds are of this group. All the T. are marine; they feed on fishes, mollusks, and other marine animals, and are excellent swimmers and divers. Many of them have long wings and are birds of powerful flight.

TOTNES, or TOTNESS, *tōt'nēs*: municipal borough and market-town of Devonshire, England; pleasantly situated on the slope of a steep hill, on the right bank of the river Dart, about 10 m. from its mouth; on the South Devon railway. It is a place of great antiquity; has an interesting church of the 15th c., and some curious antique houses: the ruined keep of the ancient castle, on the summit of the hill, is said to have been built by Joel de Totneis, a Norman baron, on whom the manor was bestowed at the Conquest, and who founded here also a Cluniac priory. The river Dart is navigable for vessels of 200 tons to the town. Steamers ply during the summer months between T. and Dartmouth.—Pop. (1881) 4,089; (1891) 4,016.

TOTO CŒLO, phrase, *tō'tō sē'lō* [L.]: by the whole width of the heaven; wide as the poles apart.

TOTTEN.

TOTTEN, *töt'en*, JAMES: soldier: 1818, Sep. 11—1871, Oct. 1; b. Pittsburgh, Penn. After graduating at West Point, he served on the frontier and in Fla. He was capt. at the outbreak of the civil war, and was chief of artillery under Gen. Lyon and Gen. Fremont 1861; brig.gen. of Mo. militia 1862; chief of artillery of the dept. of the Missouri 1864. For gallant and meritorious service at the siege of Mobile he was brevetted col. U. S. army, and later was brevetted brig.gen. U. S. army. He was retired 1870, having attained the actual rank of lieut.colonel.

TOTTEN, JOSEPH GILBERT: soldier: 1788, Aug. 23—1864, Apr. 22; b. New Haven, Conn. He graduated at West Point 1805, and was commissioned 2d lieut. of engineers, but resigned 1806, to engage in the survey of the w. territories; he returned to the engineer corps 1806. In the war of 1812 he was chief engineer under Gen. Van Rensselaer, Gen. Dearborn, and Gen. Macomb in succession, earning by his services promotion to the actual rank of capt. and brevet rank of lieut.col. He became col. and chief engineer of the army 1838. In the Mexican war he directed the siege of Vera Cruz, and was brevetted brig.gen. Thereafter his post was in Washington; but he was a member of the light-house board, and 1859-61 made a reconnaissance of the Pacific coast of the United States. In the war of secession his service was not in the field, but he was promoted brig.gen. 1863, Mar. 3, and brevetted maj.gen. 1864, Apr. 21. He was a charter member of the National Acad. of Sciences.

TOTTER—TOUCAN.

TOTTER, TOTTERING, TOTTY, TOTTIE: see under Tor.

TOUCAN, n. *tó'kăn* [F. *toucan*: Sp. *tuca*]: a picarian bird of the Linnæan genus *Rhamphastos*, now forming the family *Rhamphastidæ*, of the order *Scansores*, and containing nearly 40 known species, all natives of tropical America, and remarkable for magnitude of the bill. They are divided into two groups, the true Toucans (*Rhamphastos*) and the Aracaris (q.v.) (*Pteroglossus*), of which the latter contains the greater number of species: the former has the largest bill, and the tail is shorter. There is a difference also in the prevalent colors, the aracaris generally exhibiting much green and yellow, while the true toucans have the ground color of the plumage usually black; the throat, breast, and rump often gayly adorned with white, yellow, and red. The colors, however, are not in general finely blended, but in strong contrast. The legs are short; feet have two toes before and two behind. The body is short and thick; the tail is rounded or even, varying in length in the different species from half the length to almost the whole length of the body, and is capable of being turned up over the body in a remarkable manner, which it always is when the bird is at roost. The neck is short and thick; the enormous bill is at the base of the full width and depth of the head, and is in some species more than half the length of the body. It is arched toward the tip, irregularly toothed along the margins of the mandibles, and extremely cellular and light, yet strong in structure. The tongue is very long, narrow, and singularly feathered on each side, the processes which give it this feathered appearance probably adding much to its sensibility as an organ of taste. When a T. takes food between the points of the mandibles, the tongue is immediately applied to it, as if to test or enjoy it, and afterward it is tossed into the throat by a sudden throwing back of the head. Toucans may be described as almost omnivorous; they eat fruits with avidity, and they seize and devour small birds. The powerful bill enables them to kill a small bird by a single squeeze. They make a curious clattering noise with their great mandibles, and emit at times a harsh cry. They live chiefly in small flocks in the depths of S. American forests. They are easily tamed, and endure cold climates. In captivity they readily eat rice, bread, potatoes, eggs, and many other kinds of food. They are remarkable among birds for regurgitation of food, in order to a kind of mastication in the great bill, analogous to rumination in quadrupeds. The colors of the bill are, in most of the species, very brilliant during life, but disappear from stuffed specimens in museums. The largest species, e.g., *Rhamphastos Toco*, are about 2 ft. in length. The *R. Tucanus* is the yellow-breasted T.; the *R. Ariel* is the commonest species.

TOUCH.

TOUCH, *v.* *tűch* [*F. toucher*, to touch—from *OHG. zuchen*; *Ger. zucken*, to twitch: *O. Dut. tucken*, to touch: *It. toccare*; *Sp. tocar*, to touch]: to come close to or in contact with; to perceive by physical contact; to handle, delineate, or treat slightly; to put the hand, finger, foot, or other part on or against: to play, as a musical instrument: to arrive at; to meddle with; to rub or strike against; to soften; to make an impression on, as the heart; to have an effect on: to be in a state of contact; to take effect: to treat of slightly in a discourse; to relate to; in *OE.*, to infect; to impel forcibly; to test, as gold by a stone: *N.* the act of touching; the state of being touched; contact of two bodies at the surface; the sense of feeling (see below): that by which anything is examined; the act of putting the hand, finger, or other part on or against: manner or style of manipulation, as in playing on an instrument; a stroke; a single stroke of a pencil upon the picture being painted: slight notice: a small quantity intermixed; a trace: feature; lineament: power of exciting the affections: in *mil.*, the contact of a man in the ranks with the man next to him, to be indicated by touching his elbow: in *OE.*, test; proof; tried qualities: a touchstone. **TOUCH'ING**, *imp.*: **ADJ.** affecting; moving; pathetic: *N.* the act of coming in contact with: **PREP.** relating to; with respect to. **TOUCH'INGLY**, *ad.* *-lī*. **TOUCHED**, *pp. tűcht*: **ADJ.** mentally affected. **TOUCHABLE**, *a. tűch'ă-bl*, that may be touched. **TOUCH'Y**, *a. -ī*, irritable; peevish; irascible. **TOUCH'ILY**, *ad. -lī*. **TOUCH'INESS**, *n. -nēs*, peevishness; irritability. **TOUCH AND GO**, within the smallest possible point of happening; a very narrow escape. **TOUCH-HOLE**, the small hole of a cannon or firearm through which fire is communicated to the charge; vent (see **GUN**). **TOUCH-NEEDLES**, small bars of gold and silver, some pure, and others alloyed with certain proportions of copper, used by assayers for trying gold and silver articles. **TOUCH-PAPER**, paper steeped in a solution of saltpetre and dried, which burns slowly, used as a match (see **NITRE**). **TOUCHSTONE**, Lydian stone or Basanite (*q.v.*), a variety of flinty slate or bituminous quartz obtained from Lydia, in Asia Minor, so called from its being used to test the purity of gold and silver, the quality being judged of by the color of the streak which it leaves on the stone, as contrasted with the streak of a *touch-needle* or thin bar of metal whose purity is known—hence, a criterion. **TOUCHWOOD**, very dry decayed wood, used as tinder; amadou. **TO TOUCH AT**, to come or go to without staying; to make a call at, as steamers *touch at* certain ports. **TO TOUCH ON OR UPON**, to treat of; to mention slightly. **TO TOUCH UP**, to repair; to improve by slight touches. **TOUCH-ME-NOT**, a plant whose ripe seed-vessel, when irritated or touched, projects the seed to some distance; the *Impatiens nōī-me-tungērē*, *ord. Balsaminăcēæ*: in *med.*, the malignant disease called lupus

TOUCH.

TOUCH: one of the senses—that by which we take cognizance of the palpable properties of bodies. It is used in two applications. In its extended acceptation, it implies, says Dr. Carpenter, ‘our consciousness of *all* those sensory impressions which are neither olfactive, visual, auditory, nor gustative; and it is therefore designated as the *general sense*, in contradistinction to those which are considered as *special senses*. In its limited application, on the other hand, it is used to designate that modification of the general sensibility which is restricted to the tegumentary surface, or to some special portion of it; and which serves to excite definite ideas in our minds respecting the form, size, number, configuration, weight, temperature, hardness, softness, etc., of objects brought within its cognizance.’ See SENSIBILITY, for touch in its general sense: the sense of T. is here dealt with in its limited application, as exercised by the organs specially adapted for the reception of tactile impressions.

The special organs of T. are the papillæ (see SKIN). These are more elevated and numerous on the palmar surface of the ends of the fingers than on any other part of the skin (though they are larger on the tongue). They have an average length in man of $\frac{1}{100}$ of an inch. Their surface, after the removal of the epidermis, appears, from the investigations of Todd and Bowman, to be composed of the basement membrane of the cutis itself; and their interior is composed of fibrous tissue, vessels, and nerves (see TASTE). In each papilla is a small arterial twig, which, entering at the base, subdivides into capillary vessels, which form loops whose convexity lies in the papillary summit. The vascularity of the papillæ is so great that their presence and relative size may be determined simply by the depth of the color imparted to the skin by a good injection of its vessels. Hence, as a general rule, the vascularity of the integument is proportioned to its perfection as an organ of T. The mode in which the nerves terminate is still in question. According to Todd and Bowman, it is often impossible to detect any nerves at all within the papillæ, though nerves were plainly visible at their base; and they incline to the belief that the nervous tubules either entirely or in great measure lose the white substance when within the papillæ.

In the lower animals, as in man, the papillæ are developed especially in those parts of the outer surface especially endowed with tactile sensibility. For the following illustrations of this statement, drawn from comparative anatomy, we are indebted to Dr. Carpenter: ‘In the quadrumana generally, both the hands and feet are thickly set with papillæ; and in those which have a prehensile tail the surface of this organ possesses them in abundance. In the carnivorous and herbivorous mammalia, whose extremities are furnished with claws, or incased in hoofs, we find the lips and the parts surrounding the nostrils to be the chief seat of tactile sensibility, and to be copiously furnished with papillæ; this is especially the case with those which have the lips or nostrils prolonged into a

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snout or proboscis—as in the pig, the rhinoceros, the tapir, and the elephant. In the mole, too, the papillary structure is remarkably developed at the extremity of the snout. The only part of the skin of birds on which tactile papillæ have been discovered is on the under surface of the toes and on the web of the palmipedes where they obviously receive impressions which guide the prehensile and other movements of the feet. In many lizards a papillary structure is found on the under surface of the toes, and in the chameleon it exists also on the integument of its prehensile tail. . . . In serpents and chelonians (tortoises) no papillary apparatus has as yet been detected; and in fishes and invertebrata its presence has not been ascertained, although it would appear that certain parts, especially the tentacles around the mouth, are endowed with a high degree of tactile sensibility.' It is probable that in all animals which have a soft fleshy tongue furnished with papillæ this organ is an instrument of tactile sensibility as well as the organ of taste. Besides the papillary apparatus, certain animals have special organs of T., constructed on a totally different plan, and consisting of a rod or filament in itself insensible, but connected at its base with nervous fibres in such a manner that any motion or vibration communicated to it must be transmitted to them. The so-called 'whiskers' of the cats and certain rodents, as the hare and rabbit, belong to this class; and it has been proved, experimentally, that if they be cut off the animal loses, to a great extent, its power of guiding its movements in the dark.

Among the conditions necessary for exercise of the sense of T. are: (1) normal condition of the papillary apparatus and of the nerves supplying it; (2) due supply of blood to the tactile organs; (3), as noticed in the article TASTE, a temperature not too far removed from the natural heat of the body. It has been shown by Prof. Weber that if the fingers or the lips be immersed for half a minute or a minute in water heated to 125° , or cooled to 32° , the power of distinguishing between a hot or cold fluid or solid body is for the time completely lost, a feeling of pain alone being experienced. The result is the same on applying cold to the trunk of a nerve—the ulnar nerve at the elbow, where it lies just beneath the skin, being selected for the experiment. The fingers supplied by this nerve soon lost the power of distinguishing between heat and cold, and could only imperfectly perceive the contact and pressure of bodies.

Prof. Weber has made many experiments on the general subject of T.: for his investigations regarding the tactile discrimination in different parts of the skin, see SENSIBILITY. Prof. Valentin, whose results on the whole correspond closely with those of Weber, found, however, a considerable extent of individual variation, some persons being able to distinguish the separated compass-points at half or even one-third of the distances required by others.

There is no sense so capable of improvement as that of T.: of this power of improving the delicacy of T., says

Dr. Carpenter, 'we have examples in the case of certain artisans, whose employments require them to cultivate their tactile discrimination: thus, the female silk-throwsters of Bengal are said to be able to distinguish by the T. alone *twenty* different degrees of fineness in the unwound cocoons, which are sorted accordingly; and the Indian muslin-weaver contrives by the delicacy of his T. to make the finest cambric in a loom of such simple construction that European fingers could at best propose to make a piece of canvas at it.' The highest degree of tactile sensibility is found in blind persons—a fact due mostly to concentration of the attention and of the powers of recollection and comparison, and due probably to some extent to an increased development of the tactile organs themselves, resulting from that augmented nutrition which would be the natural consequence of the frequent use of them, and of the increased flow of blood that seems to take place toward any part on which the attention is constantly fixed.—For interesting information on this subject, see Dr. Kitto's *Lost Senses*, in which are given cases, apparently authentic, of blind persons being able to distinguish colors by the touch.

TOUGH, a. *tűf* [AS. *tóh*; Low Ger. *tage*; Dut. *taai*; Ger. *zähe*, tough; Low Ger. *tögen*; Ger. *ziehen*, to pull, to draw; Gael. *tiugh*, thick, close]: admitting of bending and pulling without fracture or injury; having the property of flexibility without brittleness; flexible; not easily broken or separated; able to endure hardships; tenacious; viscous; difficult, as a *tough* piece of business; not easily masticated, as meat. **TOUGH'LY**, ad. *-lű*. **TOUGH'NESS**, n. *-nűs*, the quality of a substance which renders it in some degree flexible and without much liability to fracture; tenacity; clamminess; viscosity. **TOUGH'ISH**, a. *-ish*, rather tough. **TOUGHEN**, v. *tűf'n*, to make tough; to grow tough. **TOUGHENING**, imp. *tűf'nűg*. **TOUGHENED**, pp. *tűf'nd*. **TOUGH'ENED** or **TEMPERED GLASS**, glass made tough or less brittle, by being first heated, and then plunged into a hot bath of oleaginous or alkaline compounds.

TOUL, *tół*: fortified town of France, dept. of Meurthe-et-Moselle; about 200 m. e. of Paris by railway. This fortress surrendered to the Germans 1870, Sep. 23, after bombardment of three days. It has an old cathedral, built through five centuries (965-1496), now the church of St. Étienne and in parts recently restored, and reckoned one of the most splendid in France. Cotton, woolen, lace, and talence manufactures are carried on.—Pop. about 10,000.

TOULA, or **TULA**, *tółá*: government in Great Russia, bounded n. by the govt. of Moscow; 11,909 sq. m. The surface is mostly level; climate temperate; soil fertile. The Oka is its navigable river; other streams are tributaries either of the Oka or the Don. The surface is in general dry, there being no lakes or marsh-lands, and forests are rare. The inhabitants are occupied chiefly in agriculture, cattle-breeding, manufac. of pottery, fishing and working of iron mines.—Pop. (1880) 1,279,715; (1897) 1,432,743,

TOULA—TOULON.

TOU'LA, or **TU'LA**: important manufacturing town of Great Russia, cap. of the govt. of T.; on the Upa, affluent of the Oka, 110 m. s. of Moscow. Its 28 churches, its arsenal, theatre, industrial museum, cathedral, and the ancient Kreml are the principal buildings. T. is an ancient town, and has suffered severely from Tartar invasion and during the wars early in the 17th c. Iron-works founded here under Czar Alexis Michailovitch have acquired high reputation. The Russian army is supplied with muskets and small-arms largely from the works here. Cutlery, locks, tea-urns, and bells are made in great perfection; and bristles are prepared in large quantities for home consumption and export.—Pop. (1897) 111,048.

TOULMIN, *tól'mǎn*, **JOSHUA**, D.D.: Unitarian minister, and author: 1740, May 11—1815, July 23; b. London. He was pastor of a dissenting congregation for a time, then of a Bapt. congregation, being at the same time bookseller; later he adopted Unitarianism, and became minister of the church in Birmingham once served by Dr. Joseph Priestley. The degree D.D. was conferred by Harvard Coll. He was author of numerous works, among them *Memoirs of Socinus*; *Internal Evidences of Christianity*; *Biographical Tribute to the Memory of Dr. Priestley*.

TOULON, *tó-lōng'*: great seaport and naval arsenal of France, and fortress of the first class, in the dept. of Var; on the shore of the Mediterranean, 42 m. e.s.e. of Marseille by railway. It stands at the head of a deeply penetrating inlet or gulf; rises in the form of an amphitheatre toward the n., where its ramparts extend to the foot of a chain of lofty elevations, in part clothed with beautiful forests. The port is divided into two parts, the old and the new—the old, on the e., appropriated to merchant-vessels, and bordered by a quay; the new, on the w., surrounded by the dock-yard, slips, arsenal, store-houses, cannon foundry, etc. Numerous forts defend the town on the land-side; and the mouth of the harbor, and the hills commanding it, are studded with forts and redoubts; while moles, hollow and bomb-proof, and formed externally into batteries, level with the water's edge, separate the roadstead from the old and new ports. Belonging to the arsenal, perhaps the finest in France, the chief objects of attraction are the sail-yard, the armory, the museum, the magazine, and the basin for repair of ships. The fortifications have been greatly extended since the conquest of Algeria, T. having become the chief port of communication with Africa. The population has also greatly increased, and two new suburbs have been constructed. The town is surrounded by a double rampart and by a wide and deep fosse, new defense-works having been added since 1880. The sanitary arrangements of T. are very defective; and cholera appeared here in a virulent form 1884. The industry and manufactures of T. depend mainly on the arsenal.—Pop. (1886) 53,941, besides 12 487 soldiers, sailors, etc.: (1891) 77,747; (1901) 101,602.

T. was destroyed by the Saracens 889, and again by the Saracens about the close of the 12th c. At the end of the

TOULOUSE.

16th c. T. became important as a naval and military stronghold. It was taken by the British and Spaniards 1793; but the allies had to evacuate the town in Dec. of the same year, after being fiercely attacked by the republicans, whose guns were commanded by Napoleon—then a mere officer of artillery—who here evinced for the first time his genius and self-reliance.

TOULOUSE, *tó-lôz'* (anc. *Tolosa*): important city in s. France, cap. of the dept. of Haute-Garonne; in a broad and pleasant plain, on the right bank of the river Garonne, 160 m. by railway s.e. of Bordeaux, 478 m. s. of Paris.—Pop. (1881) 127,196; (1886) 133,775; (1891) 149,791.

—The *Canal du Midi* sweeps round the e. and n. sides. The Garonne is here crossed by a beautiful bridge, more than 810 ft. in length, and 72 broad, which connects T. with the suburb St. Cyprien. The city, except the s. faubourg, is not particularly handsome (though the broad quays have an imposing appearance); and there are few fine public buildings. Notable, however, is the cathedral, containing the tombs of the counts of Toulouse; the *Capitole*, or town-hall; the church of St. Sernin (1090); the Musée, with its interesting collection of antiquities, forming an almost uninterrupted chain in the history of art, from the Gallo-Roman to the Renaissance period. T. is the seat of an abp., has a univ.-academy, an acad. of 'floral games' (*Société des Jeux Floraux*), claiming origin from the contests of the ancient troubadours, academies of arts, sciences, antiquities, etc., schools of law and medicine and artillery, a national college, an observatory, a museum, a botanic garden, and a public library of 50,000 vols. There are manufactures of woollens, silks, leather, cannon, steam-engines, tobacco, brandy, etc., and a great trade with Spain. Its duck-liver and truffle pies are famed throughout s. France.

History.—*Tolosa* was, in Cæsar's time, a city within the limits of the Roman *Provincia*, and had been originally the cap. of the Volcæ Tectosages, Gallic tribe noted for wealth and consequence. Under the empire its importance continued. Ausonius describes it as surrounded by a brick wall of great circuit, and so populous that it had founded four colonies. In 412, the Visigoths made it cap. of their kingdom; and after the time of Charlemagne it was under the sway of counts, who made themselves independent about 920; but 1271 the 'county of T.' was reunited to the crown of France by Philippe *le Hardi*. Its literary celebrity reaches back to the Roman empire. Ausonius speaks of the *toga docta* of 'Palladian' Tolosa; and the favorite deities of the city were Jupiter, Minerva, and Apollo. At a little village near, still bearing the name *Viel Toulouse*, a multitude of cinerary urns, statuettes, Phœnician, Celtiberian, Gallic, Greek, and Roman medals, fragments of buildings, and an entire paved street have been discovered. Early in the middle ages, under the counts of T., the city became a seat of Provençal poetry, and was the centre of the papal crusade against the Albigenes, conducted by Simon de Montfort. The par-

TOUPÉE—TOURGOUENIEFF.

liament of T. had great reputation, but unhappily is memorable most for one of its most iniquitous decisions—in the case of the Calas (q.v.) family.

TOUPÉE, n. *tû-pâ'* [F. *toupet*, a toupee, a dim. of OF. *toupe*; Ger. *zopf*, a tuft (see **TOP** 1)]: a kind of peruke; an artificial lock of hair; a curl.

TOUR, n. *tôr* [F. *tour*; It. *torno*, a turn: F. *tourner*, to turn (see **TURN**): comp. Gael. *turus*, a journey, a voyage]: *literally*, a going round—hence, a lengthy excursion; a ramble; a roving journey; in *OE.*, a turn or revolution; in *Milton*, for **TOWER**; elevation; high flight: V. to go on or make a tour. **TOUR'IST**, n. *-ist*, one who performs for pleasure a lengthy journey or excursion. **TOUR OF DUTY**, in *milit.*, the turn to go on duty.—**SYN.** of 'tour, n.': jaunt; journey; pilgrimage; excursion; round; trip; ramble; circuit.

TOURAINÉ, *tô-rân'*: one of the former provinces of France, whose cap. was Tours (q.v.); bounded n. by the province of Orleannais, e. by Berri, s. by Poitou, w. by Anjou. It was about 60 m. in length, and nearly 60 m. in breadth; and it appears on the map now as the dept. of Indre-et-Loire (q.v.).

TOURBILLION, n. *tôr-bîl'yün* [F. *tourbillon*, a whirlwind—from L. *turbo*, *turbinus*, a whirlwind, a whirlpool]: a fire-work so arranged as to rotate in the air, giving the appearance of a scroll of fire.

TOURCOING, *tôr-kwâng'*: frontier-town of France, dept. of Nord; 7 m. n.e. of Lille; on an eminence in a fertile district. It has great reputation for manufacture of linen-cloths; also carries on sugar-refining, distilling, and manufactures of soap, colors, etc. It is rapidly becoming one with the adjoining town Roubaix (q.v.).—Pop. (1881) 34,415; (1886) 41,570; (1891) 65,477; (1901) 79,243.

TOURELLE, n. *tô-rêl'* [F. dim. of *tour*, a tower]: small tower attached to a castle or mansion, and usually containing a winding stair.

TOURGEE, *tôr-zhâ'*, **ALBION WINEGAR**: author: b. Williamsfield, O., 1838, May 2. He studied at Rochester Univ. 1859-61; served throughout the war as a soldier; was wounded in two battles, and was prisoner of war four months. After the war he settled in Greensboro, N. C., and was active in politics as a radical republican. He was member of the N. C. constitutional conventions 1868 and 75, and held the office of judge 1868-74. He published a newspaper in Greensboro 1866-7. and in Philadelphia and New York *Our Continent* 1882-85, was appointed consul at Bordeaux, France, is author of works relating to N. C. law, and of several novels and political and reformatory manifestoes, some of which have had very wide circulation. Of *A Fool's Errand* nearly 150,000 copies were sold. Similar works by T. are *Bricks without Straw*; *Hot Plowshares*; *An Appeal to Cæsar*.

TOURGOUENIEFF, **IVAN SERJEVICH**: see **TURGENEF**.

TOURMALINE, n. *tôr'mă-lîn* [from *tourmal*, its name in Ceylon]: aluminous mineral occurring in primitive rocks in many parts of the world, in long prismatic crystals, most frequently black, but found of various colors, and ranked among Gems (q.v.); schorl. Its chemical composition is very complex and somewhat various, but the chief constituents are always silica and alumina in about equal proportions, and forming about three-fourths of the whole; the remainder consisting of boracic acid, fluorine, phosphoric acid, peroxide of iron, peroxide of manganese, protoxide of iron, magnesia, lime, soda, potash, and lithia—not, however, all present in any specimen. T. is harder than quartz, but not so hard as topaz or emerald. Its specific gravity is a little more than 3. It occurs in crystals, or massive and dispersed, though always crystalline. Its lustre is vitreous. Some varieties are transparent, some translucent, some opaque. Some are colorless, some green, brown, red, blue, and black. Red T. is known as *Rubellite*; Blue T. as *Indicolite*; Black T. as *Schorl*: the black is the most common. T. crystallizes in prisms, with 3, 4, or 9 sides, variously acuminate. The sides of the prisms are striated. The finest tourmalines are much valued by jewellers, but are comparatively rare. They mostly come from Ceylon, Siberia, and Brazil. Tourmaline of gem value has been found at Paris, Maine.

TOURNAMENT, n. *tôr'nă-měnt* [OF. *tornoiement*, a tournament—from *tournoier*, to joust; *torner*, to turn (see **TURN**): It. *torneamento*, a tournament; *torneare*, to surround, to tilt]: a mock fight by knights on horseback; a martial sport of the middle ages for exhibiting prowess and skill in arms; in *OE.*, encounter; shock of battle: in modern usage, any contest of skill in which a number of persons take part, e.g., a chess *tournament*. **TOUR'NEY**, v. *-nă*, to perform at tournaments; to tilt in the lists: N. a tournament. **TOUR'NEYING**, imp. **TOUR'NEYED**, pp. *-năd*.

TOUR'NAMENT: military sport of the middle ages, in which combatants engaged one another with the object of exhibiting their courage, prowess, and skill in the use of arms. The invention of the T. has been ascribed by some writers to Geoffroy de Prenilly (10th c.), ancestor of the Counts of Anjou. France was its earliest scene, whence it spread first to Germany, then to England early in the 12th c., afterward to s. Europe. A T. was held usually on invitation of some prince, who sent a king-of-arms or herald through his own dominions and to foreign courts, signifying his intention of holding a T. and a clashing of swords in presence of ladies and damsels. The intending combatants hung up their armorial shields on the trees, tents, and pavilions round the arena, for inspection, to show that they were worthy candidates for the honor of contending in the lists, in respect of noble birth, military prowess, and unspotted character. The combat took place on horseback, at least was always begun on horseback, though the combatants who had been dismounted frequently continued it on foot. The usual arms were blunted lances or swords; but the ordinary arms of

TOURNAY.

warfare, called arms à l'outrance, were used sometimes by cavaliers solicitous of special distinction. Tournaments were under minute regulations, which in some degree diminished their danger. The prize was bestowed by the lady of the T. on the knight to whom it had been adjudged, he reverently approaching her, and saluting her and her two attendants. The period when tournaments were most in vogue comprised the 12th, 13th, and 14th c.; and the place where the most celebrated English tournaments were held was the tilt-yard near St. James's, Smithfield, London. The church at first discountenanced tournaments, some of its decrees prohibiting persons from engaging in them under pain of excommunication, and denying Christian burial to a combatant who lost his life in one; but the church seems to have looked with more favor on these combats after the middle of the 13th c. During the 15th and 16th c. tournaments continued, but the change in the social life and warfare of Europe



Armor for Tournament,
1490.

had changed their character, and they became state pageants rather than real combats. The death of Henry II. of France, 1559, consequent on the loss of his eye at a T., led to their general abandonment in France and elsewhere, and there have been few attempts to revive them even as mere spectacles. A magnificent entertainment consisting of a representation of the old T. was given at Eglinton Castle, England, 1839, by the Earl of Eglinton: Lady Seymour was the Queen of Beauty, and many of the visitors enacted the part of ancient knights; among them Prince Louis Bonaparte, afterward Napoleon III.—According to Ducange, the difference between a T. and a JOUST, is that the joust is a single combat, while in the T. a troop of combatants encounter one another on either side; but this distinction has not been always observed.

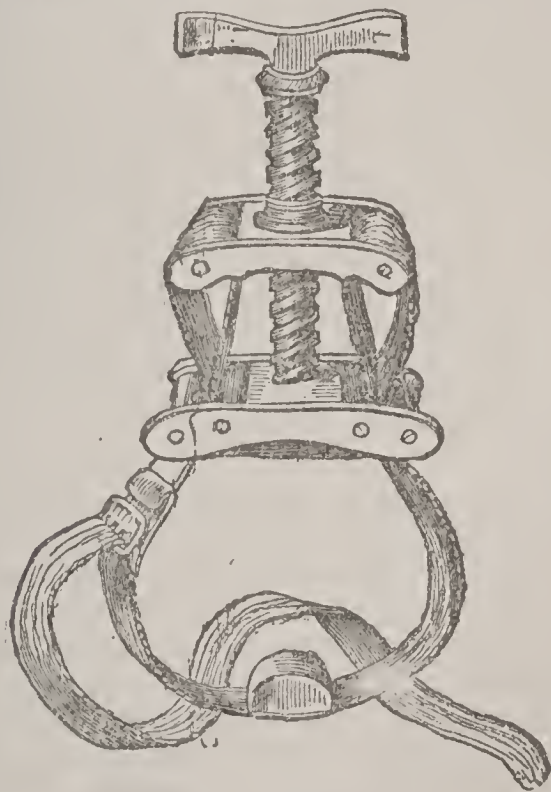
TOURNAY, *tór-nā'* (Flemish, *Doornik*): fortified town of Belgium, province of Hainault; on both sides of the Scheldt, near the French frontier. It has a splendid cathedral with five towers (and pictures by Jordaens, Rubens, Gallait, etc.), several fine churches, particularly St. Quentin and St. Jacques, a gallery of art, an episcopal seminary, five hospitals, and a lunatic asylum. Although one of the oldest towns in Belgium, T. has a modern appearance, with fine suburbs and beautiful broad streets. The chief manufactures are hosiery, linen, carpets, and porcelain; but there are few large work-shops, most of the fabrics being executed by the people in their own houses. A little to

TOURNEFORT—TOURNIQUET.

the s. e. is the famous village of Fontenoy (q.v.).—Pop. of T. (1880) 32,566; (1891) 35,403; (1901) 35,327.

T., anc. *Tornacum* or *Turris Nerviorum* ('Fort of the Nervii'), was in the 5th and beginning of the 6th c. the seat of the Merovingian kings. It subsequently belonged to France, but at the peace of Madrid was included in the Spanish Netherlands. Afterward it was more than once taken by France, but again restored by treaty. 1794, May, it was the scene of several hotly contested fights between the French and Austro-English armies, the most important of which was that of May 19, in which Pichegru defeated the Duke of York.

TOURNEFORT, *tôr-nêh-for'*, JOSEPH PITTON DE: botanist: 1656–1708, Dec. 28; b. Aix, in Provence. From youth, through his whole life, he was an ardent botanist. He became prof. of botany at the Jardin des Plantes 1683; and was sent, at the king's expense, to Spain, Portugal, England, and Holland, and to the East. He added a great number of species to the list of known plants. He died in Paris. He published several botanical works—the chief being *Institutiones Rei Herbariæ* (3 vols. Paris 1700). His botanical system maintained its ground till the time of Linnæus; and was of great service by its grouping of plants in genera. Previous botanists had described them individually, as species.



Common Tourniquet.

TOURNIQUET, n. *tôr'nî-kêt* [F. *tourniquet*, a turnstile, tourniquet—from *tourner*, to turn]: in surgery, instrument for compressing the main artery of the thigh or arm, either to prevent too great loss of blood in amputation, or to check dangerous hemorrhage from accidental wounds, or to stop the circulation through an aneurism.

TOURO—TOURS.

The common T. consists of three parts—(1) a pad to compress the artery; (2) a strong band, buckled round the limb; (3) a bridge-like contrivance over which the band passes, with a screw whose action raises the bridge and consequently tightens the band. The best kind of pad is a small firm roller about an inch thick; it must be placed lengthways over the main artery so as to compress it against the bone, and must be secured in its place by a turn of bandage, over which the band of the T. must be applied. This band must first be tightly buckled, and the pressure must be then increased to the necessary extent (namely, till the beating of the artery beyond the instrument ceases to be perceptible) by the action of the screw, which should always be opposite the buckle of the band. As the instrument arrests the venous blood, it should never be applied tightly in cases of amputation until the surgeon is ready to make his incision, as otherwise there would be excessive loss of venous blood.

The invention of the T. is ascribed usually to the French surgeon Morel, who, 1674, used a stick passed beneath a fillet and turned round so as to twist it up to the requisite degree of tightness for preventing flow of blood—a rude form of T. which may be extemporized in emergency.

TOURO, *tó'ro*, JUDAH: philanthropist: 1775, June 16—1854, Jan. 18: b. Newport, R. I., where his father was minister of the synagogue. He began his business life in Boston; sailed as supercargo of a ship belonging to an uncle, and showed courage and skill in a conflict with a French privateer in the Mediterranean 1798; settled in New Orleans as merchant 1802; was a volunteer private soldier in the battle of New Orleans, and was severely wounded by a cannon-ball. He acquired a large fortune; and to Rezin David Shepherd, whose bravery and care had saved his life in battle, T. bequeathed a large share of his estate. He founded an almshouse in New Orleans, and liberally aided many charities, Hebrew and Christian. He gave \$10,000 toward building Bunker Hill monument. He died in New Orleans; and was buried in the Jewish cemetery, Newport, R. I.

TOUROUKCHANSK, *tó-ró-čhânsk'*: small town of e. Siberia, govt. of Yeneseisk; on the Yenesei, 4,122 m. e. of St. Petersburg, and only 50 m. s. of the Arctic circle. The people trade in furs.—Pop. 300.

TOURS, *tór*: city of France, cap. of the dept. of Indre-et-Loire, formerly cap. of Touraine (q.v.); in a fertile valley, 146 m. by railway s.w. of Paris. Along its n. side flows the Loire, and along its s. side the Cher—these two rivers uniting about 25 m. s.w. of the city, between which and their point of confluence only a very narrow strip of land separates them. The bridge over the Loire, which continues the great highway from Paris s. to Bordeaux, is more than 1,400 ft. long. The cathedral is a stately Gothic edifice. Surrounding the choir—begun 1170—is beautiful old painted glass. The Tour de St. Martin or d'Horloge, and the Tour de Charlemagne, are noteworthy as the only remains of the cathedral founded by St. Martin, 4th c.

TOURVILLE—TOUS-LES-MOIS.

The church was pillaged by the Huguenots, and utterly destroyed (except the two towers mentioned) at the Revolution. T. has a town-hall and a museum. A little w. of T. are the remains of Plessis les Tours, in which Louis XI. died 1483. Manufactures of silk stuffs, carpets, painted glass, and pottery are carried on—Pop. (1881) 52,209; (1886) 59,585; (1891) 60,335; (1900) 64,695.

T., anc. *Cæsaro-dunum*, dates from the time of the Gauls, and was visited by Cæsar and by Adrian. Here Clovis, having come to thank St. Martin for the victory of Vouillé, received the crown of gold and the purple robe presented to him by Emperor Anastasius. Henry IV. planted here the first mulberry-trees known in France, and here the first silk factories were established. Under Richelieu, 40,000 hands were employed at T. in this manufacture; but the industry of the town was ruined by the revocation of the Edict of Nantes. In the Franco-German war of 1870-1, T. was for a time the seat of the French provisional govt., and later was occupied by the German troops.

TOURVILLE, *tôr-vêl'*, ANNE HILARION DE COTENTIN, Count DE: 1642-1701, May 28; b. Tourville, France; third son of César de Cotentin, Seigneur de T. He entered the French navy at the age of 18, and was conspicuous for bravery against the Turks and Algerians. He distinguished himself 1671-2 in the naval war waged by the combined fleets of France and England against the Dutch. In 1682 he was made lieut. gen. of the navy. In the war after the English revolution of 1688, between France on the one part and England and Holland on the other, T. was put at the head of the French navy; and 1690, June, he entered the English Channel at the head of a powerful fleet, and inflicted a disastrous and memorable defeat on the united English and Dutch armament near Beachy Head. 1692, May 19-24, T., with a great French fleet, met the combined English and Dutch fleets off Cape La Hogue, in one of the greatest naval battles of modern times. The five days' battle ended in the complete defeat of the French, 16 of their men-of-war being utterly destroyed. In 1693 T. was made a marshal of France. He died at Paris.—T., always personally brave, was in his early career a timid commander where his professional repute was at stake; but under the censures which his caution drew on him he became bold even to rashness.

TOUSE, v. *toʊz*, or TOUSLE, v. *toʊz'l* [Low Ger. *tusein*; Ger. *zausen*, to pull the hair about: AS. *tasan*; O. Dut. *teesen*; Dan. *tæse*, to tease wool—*lit.*, to pull to pieces]: to card or dress wool by pulling it to pieces, which are laid together again a number of times; to pull about; to drag; to tumble; to rumple; to dishevel. Touse'ing, imp. Toused, pp. *toʊzd*. Touse'ER, n. *-ér*, one who touses.

TOUS-LES-MOIS, *tô-lā-mwá'*: a starch made in the W. Indies, from the roots of a species of canna (see INDIAN SHOT); used as substitute for arrow-root.

TOUSSAINT—TOUSSAINT LOUVERTURE.

TOUSSAINT, *tô-sàng'*, ANNA LOUISA GERTRUDE: popular Dutch novelist: 1812, Sep. 16—1886, Apr.; b. Alkmaar; of Huguenot extraction. Her first work, *Almagro* (1837), was well received, and translated into German. It was followed by other works; and 1840 by *Huis Lauernessé*, a story of the Reformation (several editions, and German and English transl.). Her popularity was increased by a series of novels in 10 vols. 1845-55, under the titles *De Graaf van Leicester in Nederland* (The Earl of Leicester in the Netherlands), *De Vrouwen van het Leycestersche tijdperk* (The Women of the Times of Leicester), and *Gideon Florentz*. Her other works are numerous. Her writings are characterized by historical accuracy.—In 1851 she married Johannes Bosboom, distinguished painter, and resided at the Hague till her death.—At the Paris exhibition 1855 her husband received the gold medal for paintings of churches.

TOUSSAINT LOUVERTURE, *lô-vèr-tür'*, PIERRE-DOMINIQUE (original name, BREDA): 1746, May 20—1803, Apr. 27; b. Breda, San Domingo; one of the liberators of Hayti (q.v.). His father and mother were both African slaves—his father claiming descent from an African chief. When the French Revolution broke out, it found T. L. in the position of coachman, and a sort of sub-manager of an estate. He early showed unusual abilities, and obtained a good education—acquiring also some knowledge of surgery and medicine. In 1791 the French convention passed the memorable decree by which the rights of French citizens were given to people of color. In the revolutionary strife which followed in San Domingo, T. was, for the next three years, conspicuous for his adherence to the cause of royalty and Rom. Catholicism; but the decree of 1794, Feb. 4, declaring all slaves free, won him to the side of the French republic. He joined their commander, Laveaux, by whom he was made a gen. of division. In 1793, in the midst of the troubles, the British landed a force and took partial possession of the island. Against them T. L. proved himself an able and indefatigable enemy, bringing the whole n. division of the island under the dominion of the French republic. As a military commander he showed decided genius: his name Louverture was given him because of his prowess in *opening* gaps in the ranks of the enemy. In 1795, in consequence of a conspiracy of three mulatto generals, Laveaux was arrested at Cape Town; but T., assembling his negroes and joining the French force, quickly effected the release of the governor. The gratitude of Laveaux was very great; and 1796 the commissioners of the directory appointed T. chief of the army of San Domingo. Shortly afterward Gen. Maitland, Brit. commander, surrendered to T. L. all the strong places which he had hitherto held in the island. This was followed 1801 by the submission of the Spanish forts. The whole of San Domingo was then under the rule of T. L. His sway was vigorous and upright; and the agriculture and trade of the island flourished under him. He was now at the summit of his prosperity, and assumed great state, though retaining habits of personal simplicity. But a more powerful ruler

TOUT—TOWANDA.

now found himself at leisure to interfere in the affairs of Hayti. During the peace of Amiens, Napoleon Bonaparte issued a proclamation re-establishing slavery in San Domingo. This was met by a counter-proclamation by T. L., issued 1801, Dec. 18, in which, while professing obedience, he showed plainly that he meant resistance. A squadron of 54 sail of the line, under Gen. Le Clerc, soon made its appearance to enforce the edict of the first consul. T. was compelled to retire, was proclaimed an outlaw, and, agreeing to surrender, was received with military honors. He was afterward treacherously arrested, and sent to Paris, and after ten months' rigorous imprisonment, died in the prison of Joux, near Besançon.—See *Vie de Toussaint l'Ouverture*, by St. Remy (Par. 1850); *The Life of T.*, by Dr. Beard (Lond. 1853); Charles Sumner's *Toussaint Louverture*.

TOUT, v. *tout* [Icel. *tota*, a snout; *túta*, anything sticking out: Sw. *tut*, a point, a muzzle]: to look; to peep; to look out for custom: N. one who watches race-horses in the course of training to secure information for betting; a touter. **TOUT'ING**, imp.: N. the act or practice of looking out for customers by means of paid agents. **TOUT'ED**, pp. **TOUT'ER**, n. *-ér*, one who hangs about places frequented by tourists, to offer his services, or to secure their custom for a particular inn, conveyance, etc.

TOUT ENSEMBLE, n. *tót áng-sáng'bl* [F., all together]: the whole of anything taken together; anything regarded as a whole without regard to distinction of parts; specifically, in the fine arts, the general effect of a work of art without regard to execution of details.

TOW, n. *tō* [Fris. *touwo*, tow: Icel. *tog*, the long hairs or coarse shaggy part of the fleece; *tó*, a tuft of wool for spinning (see also Tow 2)]: the coarser part of flax or hemp separated from the finer part by the hackle or swingle.

TOW, v. *tō* [F. *touer*, to tow a vessel by a rope: Dut. *toghen*; Icel. *toga*, to pull, to drag: Icel. *tog*; Dan. *toug*, a cable: AS. *teon*, to draw]: to drag, as a boat or ship, through the water by means of a rope. **TOW'ING**, imp.: N. the act of drawing through water by means of a rope. **TOWED**, pp. *tōd*. **TOWING-BOAT**, a boat that tows; a tug-boat. **TOW-LINE**, or **TOW-ROPE**, a rope or cable used in towing or dragging a vessel through the water. **TOW-PATH**, or **TOWING-PATH**, the roadway on the banks of a canal for men or horses that tow. **TOWAGE**, n. *tō'āj*, the act of towing; the price paid for towing.

TOWANDA, *to-wán'da*: borough, cap. of Bradford co., Penn.; on the Susquehanna river, and on the Barclay, the Lehigh Valley, and the State Line railroads; 37 m. s.e. of Elmira, 85 m. w.n.w. of Scranton. It contains 8 churches, court-house, graded public schools, public library, Susquehanna Collegiate Institute, opera-house, 2 national banks (cap. \$275,000); and 1 daily, 4 weekly, and 1 monthly periodicals. The industries comprise planing, saw, and flour mills, nail, furniture, toy, and piano and organ factories, brewery and agricultural implement works.—Pop. (1880) 3,814; (1890) 4,165; (1900) 4,663.

TOWARD—TOWER.

TOWARD, prep. *tō'érđ*, or **TO'WARDS**, *-érđz* [A.S. *to-weardes*—from *to*, *to* and *weard*, direction]: in the direction of; with a tendency to; with respect to; regarding: AD. nearly; near at hand. **TO'WARD**, a. ready to do or learn; docile; in *OE.*, rash; bold. **TO'WARDLY**, ad. *-lǝ*. **TO'WARDNESS**, n. *-nēs*, or **TO'WARDLINESS**, n. *-lǝ-nēs*, readiness to do or learn; docility; aptness.

TOWEL, n. *to'w'él* [F. *touaille*; OHG. *twahilla*, a towel. It. *tovaglia*, a table-cloth: Goth. *thwahun*; AS. *thwean*, to wash]: a cloth for wiping the face, hands, or person, especially after washing; a cloth used for wiping dishes or the like after being washed; an altar-cloth. **TOW'ELLING**, n. cloth for towels.

TOW'EL GOURD, or **LOOFAH**, *lōf'ah* (*Luffa ægyptiaca*): species of cucurbitaceous plant, cultivated in Egypt, Arabia, India, China, etc., and in the s. United States. It is a climbing vine, remarkable chiefly for its ovate, fleshy fruit, somewhat like a cucumber, which varies from 6 in. to 2 ft. in length. The close vascular network of the interior of the fruit, when freed from interstitial matter and seeds, constitutes the *loofah* or T. G. of commerce. It has long been used for scrubbing-brushes, flesh-brushes, and strainers. From the fibre are made in-soles for shoes, saddle under-cloths, surgical bandage stuffs, etc.

TOWER, n. *to'w'r* [W. *twr*, a tower, a heap or pile: F. *tour*; L. *turris*, a tower: Gael. *tùr*, a tower]: a lofty building, of any form in plan, consisting of many stories, or high in proportion to its lateral dimensions; a part of a building rising high above the main edifice; a movable wooden edifice mounted on wheels, used in ancient warfare to attack a besieged town or fortress; in *OE.*, high flight; elevation: V. to be lofty, to rise above; to rise and fly high; to soar. **TOW'ERING**, imp.: ADJ. very high; elevated; soaring. **TOWERED**, pp. *to'w'rd*: ADJ. having towers; adorned or defended by towers. **TOWERY**, a. *to'w'-r'ǝ*, adorned or guarded with towers; lofty. **TOWER-MUSTARD**, n. *to'w'r-mūs'térd*, a hardy annual plant whose foliage is so disposed on the stem as to give it a pyramidal appearance; the *Arābis turrīta*, ord. *Crucifērae*.

TOW'ER: town in St. Louis co., Minn.; on Vermilion Lake, and on the Duluth and Iron Range railroad; 96 m. n. of Duluth. It is in an exceptionally rich iron and timber region; was incorporated 1884, and has all the advantages of a successful, thriving town. One of its mines is said to be the largest, and to produce the most ore containing the highest per cent. of metallic iron, of any mine in the world; and a few m. n. of the town is an invaluable tract of the best quality of Norway and white pine.—T. has 5 churches, 2 graded schools, 1 weekly newspaper, and several important manufacturing establishments.—Pop. (1890) 1,110; (1900) 1,366.

TOWER—TOWER OF LONDON.

TOWER, tow' ZEALOUS BATES: soldier: b Cohasset, Mass., 1819, Jan. 12. He graduated at West Point 1841, first in a class of 52, and was commissioned 2d lieut. of engineers and asst. prof. of engineering at the Milit. Acad. He served with distinction through the Mexican war; superintended important military and public works 1848-61; became maj. of engineers 1861, Aug. 6, and was chief engineer in the defense of Ft. Pickens. As brig.gen. of vols. he served in n. Va. under Banks and Pope, and was severely wounded at the second Bull Run battle, 1862, Aug. 30; returning to duty in the field 1864, Sep., he served in the milit. divisions of the Mississippi and Tennessee till the end of the war. He was retired as col. 1874, and brevet maj. general.

TOWER HAM'LETS: English parliamentary borough in Middlesex, in the e. of London, and having the City and Finsbury w. of it. Till 1885 it sent two members to parliament; since then it falls into seven electoral districts, each returning one member. The divisions are those of Whitechapel, St. George's-in-the-East, Limehouse, Mile-End, Stepney, Bow and Bromley, and Poplar. In T. H. are the Tower of London, Mint, Trinity House, and many of the principal docks.—Pop. of borough (1891) 444,000.

TOWER OF LONDON: in feudal days, a powerful fortress; then, and long afterward, a state prison of gloomy memories; now a government store-house and armory, and still, in some sense, a stronghold: an irregular quadrilateral collection of buildings on rising ground adjoining the Thames, and immediately e. of the City of London. The space occupied is between 12 and 13 acres, and the whole is surrounded by a moat of no great depth. Usually the moat is dry, but the garrison have the power of flooding it. Seen from without, the moat is bordered within by a lofty castellated wall, broken by massive flanking-towers at frequent intervals. Within this wall rises a second wall of similar construction but greater height; and within this are the several barracks, armories, etc.; and in the centre of all, the lofty keep or donjon known as the White Tower. This last, which nearly resembles Rochester Castle, and, like it, was built by Gundulph, Bp. of Rochester, in the time of William the Conqueror, is the centre of interest and antiquity in the whole structure. Its walls are in parts 16 ft. thick, of solid masonry. This tower was the court of the Plantagenet kings. The various other towers are noteworthy principally for the illustrious prisoners who have pined in them, or left them for the scaffold. In the n w. corner of the quadrangle is St. Peter's Chapel, now the garrison church. In another part is the Jewel-house, containing the crown jewels, or *Regalia*, comprising several crowns, sceptres, globes, and jewels of enormous value. Near this building is the Horse-armory, a collection of ancient and mediæval arms and armor, the latter being exhibited in complete suits on wooden figures of men and horses. To the crown jewels and the armory, visitors are admitted on payment of a small fee.

Early writers alleged that Julius Cæsar built the Tower

of London as a Roman fortress; but there is no record to prove the existence of any fortress on this site before the construction of the White Tower by Bp. Gundulph 1078. Some earlier structure of the Saxon times appears to have been there, from the massive foundations discovered in the course of subsequent erections; but of the nature of those buildings nothing is known. During the reigns of the first two Norman kings, the Tower seems to have been used as a fortress merely. In Henry I.'s time it was already a state prison. That monarch and his successors gradually increased the size and strength of the ramparts and towers, until the whole became a stronghold of the first class for feudal times. The kings frequently resided there, holding their courts, and sometimes sustaining sieges and blockades from their rebellious subjects. Of the long list of executions of prisoners confined here for political offenses, real or imputed, that of Lords Kilmarnock, Balmerino, and Lovat, after the rebellion of 1745, was the last. Wilkes, Horne-Tooke, and others have since been confined there; but, happily, blood has ceased to flow since the existence of a living political opposition has been found consistent with the safety of the government.

Not the least interesting memorials are the quaint and touching inscriptions cut by hapless prisoners on the walls of their dungeons.

In 1841 a serious fire broke out in the Bowyer Tower, and extended to the armories, causing the destruction of numerous modern buildings and many thousand stand of arms. At present the Tower of London is a great military store-house in charge of the war dept., containing arms and accoutrements for complete equipment of a large army. The mint and public records, formerly kept in it, have been removed to other buildings more suitable. Flamsteed, when first appointed astronomer-royal, made his observations from the summit of the White Tower; afterward he removed to Greenwich. As a fortress, the Tower would be useless against modern arms.

The government is vested in a constable, who has great privileges, and is usually a milit. officer of long service and distinguished mark; the deputy-constable, also a gen. officer of repute, is the actual governor. He has a small staff under him, and the corps of yeomen of the guard, jocularly known as Beef-eaters (see BEEF-EATER). In addition, a wing, and occasionally a battalion, of infantry is quartered in the barracks.—Bayley's *History of the Tower of London*, 2 vols. 4to; *Memoirs of the Tower*, by Britton and Brayley (1831); *Memorials of the Tower of London*, by Lord De Ros (1866); *Her Majesty's Tower*, by Hepworth Dixon, 4 vols. (1871).

TO WIT, ad. *tū wīt'* [*tō*, and *wit*]: namely; that is to say.

TOWLE—TOWNSEND.

TOWLE, *tōl*, GEORGE MAKEPEACE: author: b. Washington, D. C., 1841, Aug. 27. He graduated at Yale 1861, and in law at Harvard 1863; practiced law in Boston till 1865; was U. S. consul at Nantes, France, 1866-68, and then in Bradford, England, till 1870. He was an editorial writer for the *Boston Commercial Advertiser* 1870-71, and for the *Boston Post* 1871-76. He was a frequent contributor of essays (largely biographical and historical) to magazines, and is author of a great number of books; among them: *American Society* (London 1870); *Modern Greece*; 6 vols. of *Young Folks' Heroes of History*; *Modern France*; *Young People's History of England*; *of Ireland*. He d. 1893, Aug. 8.

TOWN, n. *town* [Low Ger. *tuun*, an inclosed place; Icel. *tún*, an inclosure: Gael. *tuín*, a dwelling: Scot. *toon*, a hamlet, a farm-house: Ger. *zaun*, a hedge: AS. *tynan*, to inclose]: originally, an inclosed place, or a place hedged in, then a farm, dwelling, village, or collection of houses walled in; any collection of houses larger than a village, generally a borough or city; any principal collection of houses of a county; the people of a town or city. **TOWNLESS**, a. *-lēs*, without towns. **TOWN-ADJUTANT**, **TOWN-MAJOR**, milit. officers on the staff of a garrison, usually veterans—the adjutant ranking as capt., the major as lieutenant. **TOWN-CLERK**, the clerk to a town or to a municipal corporation, elected in the United Kingdom by the town-council, and in the United States by the townspeople. **TOWN-COUNCIL**, body of representatives elected by their fellow citizens to manage the municipal affairs. **TOWN-CRIER**, person employed by a town to make announcements of sales, intended meetings, etc. **TOWN-HALL**, building where the public business of a town is transacted. **TOWN-HOUSE**, residence in a town, as distinguished from a *country-house*. **TOWNSHIP** n. the territory or district of a town; a subdivision of a county: in *Eng. law*, a division of a parish in which there is a separate constable, and for which there may be separate overseers of the poor (see **MUNICIPALITY**). **TOWNSFOLK**, n. *townz'fōk*, the people of a town or city. **TOWNS'MAN**, n. an inhabitant of the same town. **TOWN-TALK**, the subject of common conversation.—*Town*, in the United States, is sometimes used, as in New England, in the sense of *township*, a subdivision of a county. In other states it is a municipal corporation of a kind inferior to a city in organization and powers, extending over a definite portion of a township (see **MUNICIPALITY**).

TOWNE SCIENTIFIC SCHOOL: see **PENNSYLVANIA, UNIVERSITY OF**.

TOWNSEND, *town'zënd*. EDWARD DAVIS: soldier: b. Boston, 1817, Aug. 22. He was educated at Harvard; graduated at West Point and became 2d lieutenant of artillery 1837. He served in the Florida war, and in the troubles 1838-41 on the Canadian frontier; thenceforward his duties were at the headquarters of the army in the adjutant-general's office. He attained the actual rank of colonel 1861 and was brevetted brigadier-general 1864, major-general 1865; retired 1880. He d. 1893, May 11.

TOWNSEND—TOWNSHEND.

TOWNSEND, GEORGE ALFRED: journalist: b. Georgetown, Del., 1841, Jan. 30. He obtained employment in a Philadelphia newspaper office 1860; was war correspondent of the New York *Herald* for some months 1862; then visited Europe as correspondent of newspapers, meanwhile lecturing on the Amer. civil war; returning to America 1864, he was again a war correspondent; after the war he delivered lectures throughout the country. He chronicled the Austro-Prussian war of 1866 in letters from the field. He adopted the signature 'Gath' 1868. He is author of several books; among them biographies of Garibaldi and Lincoln, a few light dramas, and some novels; among the latter *Dr. Priestley*, or *the Federalists*.

TOWNSEND, LUTHER TRACY, D.D.: Methodist Episc. minister, and author: b. Orono, Me., 1838, Sep. 27. He was educated at Dartmouth Coll. and Andover Theol. Sem., and then was ordained to the ministry. He has been prof. of theol. in Boston Univ. since 1867. He is author of many books, some of which have had wide circulation; among them are *The Bible and Other Anc. Literature in the 19th C.*, *Credo*, *God-Man*, *Bible Theology and Modern Thought*.

TOWNSHEND, town'zənd, CHARLES, The Right Hon.: English orator and statesman: 1725, Aug. 29—1767, Sep. 4; second son of the third Viscount T. He entered the house of commons 1747, as a supporter of the Pelham (whig) administration. His first great speech was against the Marriage Bill 1753, which gained him great reputation for eloquence. At the dissolution of the whig govt., the Earl of Bute gained him by the offer of the post of sec. at war. On Bute's resignation 1763, T. was appointed first lord of trade and the plantations. By this time the versatility of his political career had obtained him the appellation of 'the Weathercock.' In the Chatham ministry 1766, he accepted the post of chancellor of the exchequer and leader of the house of commons. When Lord Chatham, in a distempered state of mind, abdicated the post of first minister, T. broke loose from all restraint, and manifested immense vanity, ambition, and arrogance. George Grenville, smarting under the defeat of his favorite scheme of taxing America, on one occasion, in the middle of his harangue, turned to the ministers: 'You are cowards,' he said; 'you are afraid of the Americans; you dare not tax America.' T.'s fiery temper was kindled, and he exclaimed: 'Dare not tax America! I dare tax America.' Grenville retorted: 'I wish to God I could see it!' and T. replied: 'I will, I will.' He was not allowed to forget his pledge; and finding the notion of an American revenue agreeable to the court and not unpalatable to the house of commons, he proposed and carried those measures that led ultimately to the separation of the American colonies. T.'s wife was created Baroness Greenwich, and he was about to be intrusted with formation of a ministry when he was carried away by a putrid fever in his 42d year. The difference between his contemporary reputation and his fame is very striking. He was ranked as an orator with Pitt. He was far more popular than the great commoner with the house of commons, in which

assembly he made many speeches whose wit and recklessness alike were unbounded. Burke called him 'the delight and ornament of the house of commons.' Macaulay speaks of him as 'the most brilliant and versatile of mankind,' who had 'belonged to every party, and cared for none.' He married Caroline, daughter and heiress of John, second Duke of Argyle and Greenwich, and widow of the Earl of Dalkeith.

TOWNSHEND (**CHARLES TOWNSHEND**), second Viscount: English statesman: 1674-1738, June 21; descended from a very ancient Eng. family, settled at Raynham, Norfolk, since the reign of Henry I. His father, Horatio, first Viscount T., had been a prominent member of the Presb. party before the Restoration; and, having been one of the most forward in restoring the monarchy, was by Charles II. made baron 1661, viscount 1682: he died 1687, when his son was only 11 years old. When he was of age to take his seat in the upper house, he adopted his father's politics, but soon became a disciple of Lord Somers, and cordially co-operated with the whigs. He was employed as a diplomatist; was joint-plenipotentiary with Marlborough at Gertruydenberg; and negotiated with the states-general the Barrier treaty, which pledged the states-general to the Hanoverian succession, and England to procure the Spanish Low Countries for the United Provinces, as a barrier against France. In 1712, on formation of the Harley ministry, T. was dismissed from his places, and the Barrier treaty was censured by the house of commons, which voted that T. and all who had been concerned in the treaty were enemies to the queen and kingdom. This persecution raised him from a follower to a leader. He maintained close correspondence with the court of Hanover, and obtained the entire confidence of George I., who, on his accession to the throne of England, made him his chief minister. While George I. was still at the Hague, on his way to his new kingdom, he made T. sec. of state, with power to name his colleague. He selected Gen., afterward Earl, Stanhope, and formed a ministry entirely whig in party character. He strengthened it by the addition of Walpole, who, from being at first paymaster of the forces, was soon made chancellor of the exchequer and first lord of the treasury. The principal act of the govt. was the passing of the Septennial Bill, a bold and unconstitutional act. After the breaking of the South Sea Bubble, and the deaths of Sunderland and Stanhope (q v.), T. (1721) again became sec. of state. But he was no longer the acknowledged leader of the whigs. The superior talent of Walpole, with his financial abilities and his influence in the house of commons, caused a change in the relative position of the two ministers, and converted into rivals and enemies those who long had been friends and colleagues, and who were also family connections (for T. had married Walpole's sister). An unseemly quarrel broke out between them: they seized each other by the collar, and then laid hands on their swords. The interposition of friends prevented a duel; and T., resigning the contest, retired to Raynham to cultivate

TOWSON—TOY.

his paternal acres. Walpole, on being asked the cause of his difference with his brother-in-law, replied: 'As long as the firm was Townshend and Walpole, all did very well; but when it became Walpole and Townshend, things went wrong, and a separation ensued.' T.'s temper was resolute and imperious; but he left office with hands absolutely clean from selfish gain. T. introduced the turnip into Norfolk from Germany, effecting a beneficial revolution in agriculture. He steadily refused to reappear in public life, and died in a good old age, leaving a high reputation for integrity and steady consistency in sound and constitutional principles of government.

TOWSON, *tow'son*, **NATHAN**: soldier: 1784, Jan. 22—1854, July 20; b. near Baltimore, Md. He earned distinction by gallantry, and was brevetted maj.gen. 1848.

TOXIC, a. *tōks'ik*, or **TOX'ICAL**, a. *-ī-kāl* [Gr. *toxikōn*, a poison]: poisonous. **TOXIC AMAUROSIS**, impaired vision and blindness due to the action of a poison.

TOXICANT, n. *tōks'ik-ant* [Eng. *toxic*]: poison: **ADJ.** having poisonous effect.

TOXICODEN'DRON: see **SUMACH**.

TOXICOLOGY, n. *tōks'ī-kōl'ō-jī* [Gr. *toxikōn*, a poison; *logos*, discourse]: that branch of medical science which relates to poisons, their effects, detection, and antidotes. **TOX'ICOLOG'ICAL**, a. *-kō-lōj'ī-kāl*, of or relating to toxicology. **TOX'ICOLOG'ICALLY**, ad. *-lī*. **TOX'ICOL'OGIST**, n. *-kōl'ō-jīst*, one who is skilled in the science which relates to poisons.—*Toxicology* embraces the physical and chemical history of poisonous substances, the methods of testing for them, their action on the living body, the *post-mortem* results which they occasion, and (according to some writers) the medical treatment that should be adopted. The word has a somewhat far-fetched origin (from Gr. *toxikon* and *logos*). The Greek word *toxikon* signifies 'anything relating to *toxōn*, a bow;' hence with the word *pharmakon*, a drug, it was used to designate 'poison for smearing arrows,' and then *poison* generally.

TOXIN, or **TOXINE**, n. *tōx'in*, or *-ēn* [from Gr. *toxikon*, from *toxikos*, of the bow, from *toxōn*, bow]: in *chem.*, a poisonous base found in animals, caused by tissue-metabolism; a poisonous ptomaine.—See **PTOMAINE**: **BACILLUS**: **BACTERIA**: **TUBERCULOSIS**: **ANTI-TOXIN**: ETC.

TOXOPHILITE, n. *tōks-īf'ī-līt* [Gr. *toxōn*, a bow; *philos*, a lover]: a lover of archery; an archer: **ADJ.** of or pertaining to archery.

TOY, n. *toy* [an ellipse for *play-toy*, implements of play: Low Ger. *tüg*; Dut. *tuig*; Dan. *tøi*, materials, implements: Ger. *zeug*, materials, lumber; *spielzeug*, 'toys']: a child's plaything; a bauble; that which is valued for its look only, or for amusement; in *OE.*, play; sport; amorous dalliance; old story; odd conceit; wild fancy: **V.** [OE. *togge*, to tug (see **TUG**)]: to handle amorously; to trifle; to treat foolishly; to play with. **TOY'ING**, imp. **TOYED**, pp. *toyed*. **TOY'ISH**, a. *-īsh*, trifling; playful. **TOY'ISHLY**, ad. *-lī*. **TOY'ISHNESS**, n. *-nēs*, the quality or state of being toy-

TOY—TRABECULA.

ish. TOY'SOME, a. -sŭm, or TOY'FUL, a. -fŭl, full of dalliance; wanton. TOYSHOP, a shop where toys are sold. *Note*.—TOY as a noun and verb have really different roots, but the senses have become so mixed up that it was thought better to group them together.—*Toys* are made in great numbers in London, Birmingham, and other places in Great Britain; but much more extensively in Germany and Switzerland. Nuremberg especially is important in this respect, a large portion of the inhabitants of that town being engaged in the manufacture and sale of toys. Japan also is noted for its toys.

TOY, CRAWFORD HOWELL, D.D., LL.D.: educator: b. Norfolk, Va., 1836, Mar. 23. He graduated at the Univ. of Virginia 1856; was ordained 1860 as a Bapt. minister; then was teacher in different educational institutions; chaplain in the Confederate army during the secession war; studied Semitic languages in Berlin 1866-68, and afterward was prof. of Hebrew in the Southern Bapt. Theol. Sem.; since 1880 he has held the chair of Hebrew at Harvard Univ. He is author of *History of the Religion of Israel*; and has gained note as a free critic of the Hebrew Scriptures.

TOYN'BEE HALL: centre for charitable and educational work in the Whitechapel dist. of London; named after Arnold Toynbee (d. 1883), in commemoration of his earnest endeavors to better the condition of the poor. It is conducted by graduates of English universities, and is one of the 'university settlements.' About 15 univ. men are in residence at T. H., most of whom give their whole time to the beneficent work, living at their own charges. The T. H. men have for their object the moral elevation and the mental improvement of the people among whom they have established themselves, and they are also leaders in all charitable and reformatory effort in their district. In their hall during the winter the lectures of the univ. extension are given; also, classes are conducted for instruction in various branches of knowledge, particularly in political economy. The library comprises 4,000 vols. Among the annexes of T. H. is a sort of college affording residence accommodation to 40 young men—clerks, artisans, schoolmasters, etc.—desirous of pursuing historical, economic, literary, and other studies.

TRABECULA, n. tră-běk'ŭ-lă, TRABEC'ULÆ, n. plu. -ŭ-lē [L. *trābecŭla*, a little beam or rafter—from *trabs*, a beam]: in *bot.*, cross-bar-like projection extending across the cell cavity of the ducts of some plants, or across the cavity of the sporangium of many mosses; plu. in *anat.*, fibrous cords or tissues which ramify the substance of various soft organs, such as the spleen. TRABECULAR, a. tră-běk'ŭ-lēr, of, pertaining to, or of the nature of the bands or fibres called trabeculæ. TRABECULATE, a. tră-běk'ŭ-lăt, traversed by trabeculæ.

TRACE—TRACERY.

TRACE, n. *trās* [F. *trace*; It. *traccia*, a trace, a point of the foot: Sp. *traza*, first sketch, outline: F. *tracer*, to trace, pursue—from L. *tractus*, pp. of *trahĕrĕ*, to draw]: mark or visible appearance left by something passing; a footstep; a vestige; a token; a track; remains; minute quantity: V. to delineate with marks; to follow by the visible marks left; to follow by footsteps or tracks; to follow exactly; in *OE.*, to walk over; to walk; to travel. **TRA'cing**, imp.: N. course; regular track or path; a delineation by visible marks; a plan; a sketch. **TRACED**, pp. *trāst*, marked out; followed by footsteps. **TRA'cer**, n. *-sēr*, one who traces. **TRACE'ABLE**, a. *-sā-bl*, that may be traced. **TRACE'ABLY**, ad. *-blŭ*. **TRACE'ABLENESS**, n. *-bl-nĕs*, the state of being traceable. **TRA'cery**, n. *-sēr-ŭ*, artistic work in fanciful and flowing outlines; certain kinds of ornamental stonework, as in Gothic windows (see below). **TRACING-PAPER**, a semi-transparent paper used in copying sketches or outlines, over which it is laid (see **PAPER**).

TRACE, n. *trās*, usually in the plu. **TRACES**, *trā'sĕz* [OE. *trayce*, horses' harness: OF. *traict*; F. *trait*, a team-trace, a shaft—from L. *tractus*, a drawing or dragging—from *trahĕrĕ*, to draw]: one of the two straps, ropes, or chains by which a vehicle is drawn by the horse or other draught-animal to which it is harnessed; a 'tug.'

TRA'cery: in *arch.*, ornamental open-work in stone with which the arches of Gothic windows are filled for support of the glass. This open-work varies with every variety of Gothic architecture. Gothic windows were at first narrow, and covered with a simple arch. Then two windows were grouped, and an arch thrown over both. The space thus inclosed became part of the window, and was at first pierced with a circle, quatrefoil, or other open-



Fig. 1.

ing (fig. 1). When three or more windows were grouped under one arch, the *shield* or space in the arch became larger, and was pierced with apertures of various forms. In the early Pointed styles these were usually circles filled with cinquefoils, trefoils, etc. (fig. 2). During the Decorated period the T. became more varied, composed of squares, triangles, and other forms, filled with foils, and

having the appearance of being packed together (fig. 3). This kind of T. is called 'Geometric.' The windows of the transition from Decorated to Perpendicular had T. of

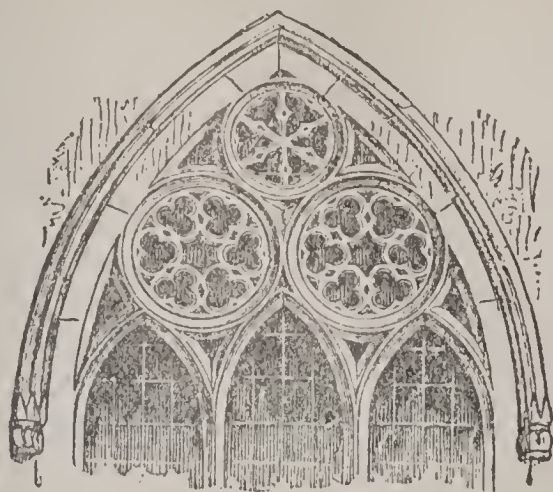


Fig. 2.

more flowing character, while that of the Perpendicular Period (q.v.) became almost entirely composed of vertical lines. The Flamboyant (q.v.) or contemporary style in

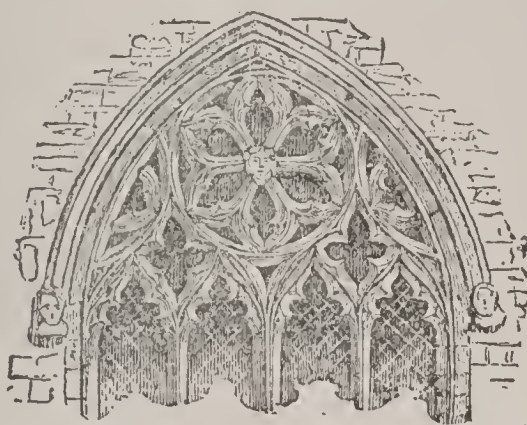


Fig. 3.

France had T. of very different style—as free and graceful as the other was straight and stiff.—Panels are often filled with T.: such panels cover the exteriors of the Perpendicular period. The wood-work of all periods is filled with ornamental tracery.

TRACHEA, n. *tră-kě'ă* [Gr. *trachus*, rough, rugged—fem. *tracheia*, the word *artēria*, artery, being understood]: cartilaginous and membranous tube which conveys the air into and out of the lungs; the windpipe (see RESPIRATION). TRACHE'Æ, plu. *-ē*, the air-tubes of the body in insects: in bot., the spiral vessels of plants. TRACHE'AL, a. *-ăl*, pertaining to the windpipe. TRACHEARY, a. *trăk'ě-ă-rĭ*, pertaining to the trachea; pertaining to the spiral vessels of plants; breathing through tracheæ. TRACHEITIS, n. *trăk-ě-ĭ'tis*, or TRACHITIS, n. *tră-kĭ'tis*, inflammation of the trachea. TRACHEOTOME, n. *tră'kē-o-tōm*, a surgical knife or lancet for making an incision in the windpipe.

TRACHE'A, AFFECTIONS OF THE: ailments of the trachea which require surgical or medical aid.—*Foreign bodies* occasionally pass through the larynx into the trachea. In cases of this kind, the patient who has had some foreign substance in his mouth, which is supposed to have been swallowed, is seized with a convulsive cough, threatening suffocation, but subsiding after a time. The symptoms that then ensue vary with the weight and figure of the substance, and according as it is fixed or movable. A large and very irregular body may be impacted in the trachea, more or less obstructing respiration on both sides of the chest; and this obstruction will probably soon be increased by the inflammatory products that are excited. A small heavy body will usually pass through the trachea into one of the bronchi (usually the right), or into one of its branches, obstructing respiration to a less extent. 'If the foreign body be allowed to remain, the progress of the symptoms presents much variety in different cases. Death may occur from spasm of the glottis, or, the foreign body being propelled upward into the rima, death may take place by its mechanically preventing the passage of air; or rupture of one of the cerebral blood-vessels may be produced during one of the fits of coughing. At a later period the lungs may become congested and emphysematous, or bronchitis, pneumonia, or pleurisy may supervene.' Although inversion of the body, with succussion and lateral movement of the larynx, has in some few cases been successful, it is now deemed advisable by the highest authorities to precede the attempt at removal by making an artificial opening into the windpipe. A free aperture is thus secured for respiration, spasm of the glottis is prevented, and the foreign body is commonly expelled through the artificial opening, or falls through the glottis into the mouth.—*Rupture of the Trachea* from external injury sometimes (though rarely) occurs, and generally proves fatal in consequence of the rapid and extensive emphysema which usually ensues.—*Wounds of the Trachea*: see THROAT.—Except Croup (q.v.), there is no special disease of the trachea; indeed, in croup the trachea is seldom exclusively affected. Hence the term *Tracheitis*, used by some nosologists as synonymous with croup, is hardly warrantable. Similarly, in more advanced life the trachea is doubtless often the seat of inflammation, but never the special and exclusive seat, and both the symptoms and treatment merge into those of bronchitis or laryngitis.

TRACHEARIA, n. plu. *trăk'ĕ-ă'rĭ-ă* [Eng *trachea*, the windpipe]: the division of Arachnida which breathe by means of tracheæ; also named TRACHEATA, n. plu. *trăk'ĕ-ă'tă*. TRACHEIDES, n. plu. *trăk'ĕ-ĭ'dēs* [Gr. *eidos*, resemblance]: in *bot.*, spiral vessels which serve as air-conducting tubes after the protoplasm and cell-sap have disappeared.

TRACHEOTOMY—TRACHOMA.

TRACHEOTOMY, n. *trăk'ě-ôt'ō-mĭ* [Eng. *trachea*, the windpipe; Gr. *tomē*, a cutting]: in *surgery*, operation of making an opening in the windpipe. LARYNGOT'OMY is for convenience included here.—The air-passages may be opened in three different situations—namely, through the crico-thyroid membrane (see LARYNX), when the operation is termed Laryngotomy; through the cricoid cartilage and the upper rings of the trachea—Laryngo-tracheotomy; and through the trachea, below the isthmus of the thyroid gland—Tracheotomy proper. Laryngotomy and tracheotomy are more frequent than laryngo-tracheotomy, to which no further allusion is required. Laryngotomy is more quickly and easily performed, especially in adult males, and is less dangerous; tracheotomy is more difficult, tedious, and dangerous, but must be selected in some cases, e.g., where there is necessity for introducing the forceps. When the operation is completed, a large curved tube to breathe through is inserted in the aperture, and secured round the neck with a tape.

A double tube or canula has many advantages, as by withdrawing the inner one, which should slightly project at its lower extremity, it may be cleared of any mucus or blood that may have accumulated in it without disturbing the wound. The calibre of the inner tube should always be sufficiently large to admit as much air as usually passes through the chink of the healthy glottis. The after-treatment is much the same as that required for wounds in the Throat (q.v.). 'Opening of the air-passages may be required,' says Gray, 'in any case of disease or injury which produces mechanical impediment to the passage of air from the mouth into the trachea; in cases of foreign substances in the air-passages; and in some cases of suspended animation where artificial inflation of the lungs cannot be performed by the ordinary means.' In the case of a foreign body, its situation will determine the seat of the incision. Among the cases in which tracheotomy may be required are cut throat, acute laryngitis, croup, diphtheria, chronic inflammation and ulceration of the larynx, necrosis of the laryngeal cartilages; tumors, excrescences, or epithelial growth within the larynx; tumors (bronchocele, abscesses, etc.) external to the larynx or upper part of the trachea, and impeding respiration by pressure, etc. It has been recommended, but with little advantage, also in hydrophobia, tetanus, and severe forms of epilepsy, for relieving the suffocating spasms in these diseases. Laryngotomy may advantageously be resorted to in cases of spasm of the glottis, in inflammation with œdema of the cellular tissue of the larynx, in inflammation of the tongue, in tonsillitis and pharyngitis if the swelling is so great as to produce symptoms of suffocation, etc.

TRACHOMA, *trā-kō'ma* [from Gr. *trachoma*, roughness—from *trachus*, rough]: in *surgery*, a granular condition of the mucous covering of the eyelids, often accompanied with haziness and vascularity of the cornea; granular lids; one of the most serious *sequelæ* of purulent Ophthalmia (q.v.).

TRACHYTE—TRACTABLE.

TRACHYTE, n. *trăk'it* [Gr. *trachus*, rough]: in *geol.*, a volcanic rock, rough and gritty to the touch, composed chiefly of Felspar (q.v.), confusedly agglomerated in crystals, which are usually very small or wholly indistinguishable, and lustreless. Much of the T. is like ashes in appearance, but hardened into stone; and, in fact, such it is in many instances, if not in all—submarine volcanic ash, indurated but light on account of its minutely vesicular structure, due to the presence of steam in its formation. Crystals of mica and hornblende also are often present, and more rarely crystals of augite, all imbedded in a felspathic paste. T. in many varieties abounds in the Rocky Mt. region; and a beautiful purple kind is used for fine buildings in Denver, Colo., and elsewhere. By some geologists T. has been made the name of a class of volcanic rocks, in which Clinkstone, Obsidian, and Pumice are included. **TRACHYTIC**, a. *tră-kít'ik*, pertaining to or consisting of trachyte. **TRACHYTIC PORPHYRY**, a porphyry composed essentially of trachyte.

TRACK, n. *trăk* [OF. *trac*, a beaten way, a trade or course: Ger. *trapp*, the sound of the footfall, a foot-print: Norw. *trakka*, to trample: Dut. *trekken*, to draw, travel, march: confused in old authors with *tract*, and in old and modern authors with *trace*]: a footmark; a mark or marks left upon the way by something that has passed along; a beaten path; course; road; way; in *rail.*, the permanent way: V. to follow by the marks left upon the way; to tow a vessel by a rope, as into a harbor or along a canal. **TRACK'ING**, imp. **TRACKED**, pp. *trăkt*. **TRACK'ER**, n. *-ér*, one who follows by the marks or footsteps. **TRACK'LESS**, a. *-lës*, without a road or path; untrodden. **TRACK'LESSLY**, ad. *-lî*. **TRACK'LESSNESS**, n. *-nës*, the state of being trackless or without a track. **TRACK-ROAD**, a towing-path. **TO MAKE TRACKS**, in *slang*, to depart.

TRACT, n. *trăkt* [L. *tractus*, a drawing or dragging, a district; *tractātus*, a handling, a treatise; *tractus*, pp. of *trahĕrĕ*, to draw]: extent; expanse; stretch or area of land or water of indefinite extent; region; a short treatise on a particular subject in the form of a pamphlet; length; extent; in *OE.*, discourse; explanation; also used for *track* in *OE.*: V. in *OE.*, to trace out. **TRACTARIAN**, n. *trăk-tă'rĭ-ăn*, one of the writers of the Oxford 'Tracts for the Times' (1833-41); a supporter of Tractarianism. **ADJ.** of or pertaining to Tractarianism. **TRACTA'RIANISM** (see below). **TRACTATE**, n. *trăktăt*, a small book; a tract; a treatise. **TRACTS FOR THE TIMES, or OXFORD TRACTS** (see **TRACTARIANISM**).—**SYN.** of 'tract, n.': region; quarter; district; treatise; dissertation; essay; monograph.

TRACTABLE, a. *trăk'tă-bl* [L. *tractab'ĭlis*, quiet, manageable—from *tractĕrĕ*, to handle, to manage—from *tractus*, pp. of *trahĕrĕ*, to draw]: easily led, managed, or taught; docile. **TRACTABLY**, ad. *-blĭ*. **TRACTABLENESS**, n. *-bl-nës*, or **TRACTABILITY**, n. *-blĭ ĭ-tĭ*, the state or quality of being tractable or manageable; docility.

TRACTARIANISM.

TRACTA'RIANISM: remarkable and important movement in the English Church during the second quarter of the 19th c., consisting in an endeavor to revive and bring into prominence the principles of antiquity, catholicity, and authority recognized in some portions of the Anglican formularies, in reaction from the Prot. sentiments long and widely prevailing. The name is from a series of papers entitled *Tracts for the Times*, pub. at Oxford 1833-41, hence called the 'Oxford Tracts.'—The agitation of the question of Rom. Cath. emancipation led, in some cases, to the study of Rom. Cath. theology, with a view to determine the real grounds of difference between the Roman and Anglican churches; and the religious and æsthetic tone of Wordsworth's poetry, still more developed in Keble's *Christian Year* (1828), may have influenced some minds in a direction to which T. was akin. The lectures of Bp. Lloyd, when Regius prof. of divinity at Oxford about 1823, on the Prayer-book and the Council of Trent, are considered to have opened the way to the teaching of the *Tracts*. But the immediate origin of the movement appears to have been the alarm aroused for the interests of the English Church on occasion of the suppression by the reform govt. of some of the Irish sees, and the threatened alienation of Irish church property. It is said that about that time a meeting of clergymen took place at Hadley, in Suffolk, at which measures were concerted for opposing the alleged latitudinarian tendencies of the day, and restoring the high-church theology of the Anglican divines of the 17th c. The chief promoters of T. were the Rev. John Keble (q.v.), author of the *Christian Year*, and formerly prof. of poetry at Oxford; the Rev. John Henry Newman (q.v.) and R. H. Froude, fellows of Oriel; the Rev. E. B. Pusey (q.v.), Regius prof. of Hebrew and canon of Christ-Church; the Rev. Isaac Williams, fellow of Trinity, author of *The Cathedral, and Other Poems*; the Rev. Hugh Rose of Cambridge; and others. The *Tracts* were issued anonymously, and, with articles in the *British Critic* by the same writers, produced great effect, especially among the clergy. Protestant principles were openly discountenanced, and tenets closely resembling those of the Church of Rome were boldly advanced. The doctrines of Apostolical Succession, Priestly Absolution, Baptismal Regeneration, the Real Presence, the Authority of the Church, and the Value of Tradition, which had long lain hid in the language of the Prayer-book, were widely revived and taught, and caused much alarm in some quarters; though it must be admitted that those principles had always been held by a portion of the English clergy, and have in some degree a place in the Book of Common Prayer. The study of the Fathers and old divines, of church history and ancient liturgies, was greatly revived in the universities and among the clergy, and a host of publications inculcating with more or less extravagance the same views issued from the press. The movement proceeded, notwithstanding the general opposition of the authorities, till it culminated in the publication, by the Rev. J. H. Newman, of Tract No.

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90, designed to show that much Roman doctrine might be held consistently with subscription to the Thirty-nine Articles. This, being held to favor a 'non-natural' interpretation, met general condemnation, and led to the termination of the series, to the resignation by Newman of the vicarage of St. Mary's, Oxford, and subsequently to his secession 1845 to the Church of Rome. In this step he was followed by many of his friends and associates, though the other leaders of the movement continued in the English Church. With Newman's secession the Tractarian movement terminated; but its effect remains in several visible results. 1. There was a revival and strengthening of the high-church party, which still maintains to a great extent the principles advocated in the *Tracts*; and though checked in England by some judicial decisions, e.g., the Gorham (q.v.) judgment, in the endeavor to acquire exclusive power, has gained great and increasing influence in the church. 2. Side by side with the revival of 'catholic' doctrines there has been great development of ritual. Though ritual was not in itself a prominent object in the minds of the leaders, the Tractarian movement was early marked by introduction of various alterations in the performance of divine service, such as the use of the surplice instead of the gown, intoning the prayers and singing the responses, elevation of the communion table into an altar, substitution of low open benches for high pews—all of which, though claiming to be a restoration of ancient usage and having the authority of the law, were regarded with alarm as approximating to the Church of Rome (see RITU-ALISM). 3. Another effect was the remarkable impulse given to the building and restoration of churches, and the revival of Gothic architecture, in all parts of England: this has given a character to the ecclesiastical buildings of the 19th c. which will mark them for ages to come. 4. The movement has undoubtedly caused the secession of many English clergy and laity, some of them men of eminence, to the Church of Rome, which has greatly increased the strength and influence of the Roman communion in Britain and America, and caused great scandal to zealous Protestants. Lastly, the movement may be admitted to have involved an awakening of the Anglican Church from lethargy, with the result of an increase of learning, piety, and devotedness among the clergy, and the establishment of colleges, sisterhoods, and other religious and charitable institutions; and latterly to have developed a noble zeal in bringing Christian forces to bear on the vast indifferent masses and on the lowest and most degraded. —The daughter church in the United States has naturally shared in the general effects of this movement.

TRACTILE, TRACTION: see under TRACTOR.

TRACTION-ENGINE: self-propelling engine, for drawing loads on common roads. It has been a favorite idea with mechanics to make a light carriage, for use on ordinary roads, containing a steam-engine and boiler to propel itself. No doubt such a vehicle for light loads can

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be easily made, but its cost will be great in proportion to any service that it can render.

The true application of steam on common roads is in the drawing of heavy loads which would require an inconveniently large number of horses. Engines for this purpose are called *traction-engines*, and their use is increasing. Traction-engines or road-locomotives are now made by the chief makers of agricultural implements. These are of different types—some for drawing very heavy loads; some for lighter work, such as drawing a threshing-machine from place to place over moderate gradients; these latter being adapted also for a variety of purposes for which a self-moving has been found to possess great advantages over an ordinary portable engine. Some recent forms of traction-engines have driving-wheels 7 or 8 ft. in diameter. One form has thick India-rubber tires—rings of India-rubber, four or five inches thick, stretched over the rim of the wheel, and protected by a flexible circle of steel shoes from damage by stones, etc. The advantage of such tires is the greater adhesion (in proportion to weight) which they give to the engine, and the saving the machinery from shocks and jars. Their great cost is a hindrance to their adoption. —See STEAM-CARRIAGE.

TRACTOR, n. *trăk'tēr* [L. *tractus*, a drawing or dragging—from *trahĕrĕ*, to draw or drag]: that which draws or is used for drawing. TRAC'TORY, n. *-tĕr-ĭ*, or TRACTRIX, n. *trăk'trĭks*, in *geom.*, a curve of which the tangent is always equal to a given line. TRAC'TILE, a. *-tĭl*, that may be drawn out in length; ductile. TRAC'TION, n. *-shŭn* [F. —L.]: the act of drawing, or the state of being drawn; attraction. TRAC'TIVE, a. *-tĭv*, that pulls or draws; capable of pulling. TRAC'TORA'TION, n. *-tĕr-ă'shŭn*, a disused method of treating diseases (see PERKINS, ELISHA). ELECTRIC TRACTION (see ELECTRIC RAILWAY).

TRACT SOCI'ETIES: see RELIGIOUS TRACT SOCIETY.

TRACY, *tră'sĭ*, BENJAMIN FRANKLIN: lawyer: b. Owego, N. Y., 1830, Apr. 26. He received an academical education; was admitted to the bar 1851; became dist.-atty. of Tioga co., N. Y., 1854; and was re-elected 1856. In 1861 he was elected to the legislature; 1862 organized three regiments for the Union army; and, after serving through the Wilderness campaign and receiving the brevet of brig.gen., was placed in command of the Elmira camp of Confederate prisoners, and remained there till the close of the war. He was appointed U. S. dist.atty. 1866; declined reappointment 1868; was counsel for the defense in the Tilton-Beecher trial; and served a short time as a judge of the N. Y. court of appeals. In 1889 he became sec. of the navy in Pres. Harrison's cabinet, and 1890, Feb. 3, his wife, daughter, and wife's maid were burned to death by fire in his Washington residence, and he narrowly escaped. His administration of the naval dept. was notably careful, thorough, and energetic. In 1897 he was nominated as the republican candidate for the first mayor of the enlarged New York. The republican vote was divided, and he was defeated by a great majority.

TRADE.

TRADE, *n.* *trād* [AS. *træd*, trod; *tredan*, to tread: Dan. *træde*; Goth. *trudan*, to tread (see **TREAD**, of which *trade* is a derivative)]: the proper meaning of *trade*, frequently found in *OE.*, is trodden way, beaten path or course, and, hence, a way of life; the handicraft which a person has learned, and which he carries on for a livelihood; mechanical or mercantile employment, as distinguished from a learned profession: occupation: the body of persons engaged in the same particular employment; the business of buying and selling by barter or for money; commerce: in *OE.*, a standing practice; habit; custom: *V.* to engage in selling and buying for money or by barter; to carry on commerce; to deal; to traffic; to sell or exchange in commerce. **TRA'DING**, *imp.*: **ADJ.** carrying on commerce; as applied to politicians and public men, venal; having the character of an adventurer; having a price: *N.* the act of one who carries on a trade; the business of carrying on trade. **TRA'DED**, *pp.*: **ADJ.** in *OE.*, versed; practiced. **TRA'DER**, *n.* *-dër*, one engaged in buying and selling commodities; vessel sailing with goods for trading. **TRADE CORPORATIONS** (see **CORPORATION**: **JOINT-STOCK COMPANY**). **TRADE-PRICE**, the price after deducting discount allowed to retailers; the price at which wholesale traders supply goods to retailers. **TRADE-SALE**, a sale by auction for any particular trade, especially booksellers or publishers. **TRADES FOLK**, *n.* *trādz'fōk*, persons engaged in trade. **TRADES'MAN**, *n.* *-mān*, a craftsman; a mechanic; a common name for a shopkeeper. **TRADE-MARK**, symbol impressed by a tradesman or manufacturer on his own goods (see below). **TRADES-PEOPLE**, persons engaged in trades, especially shop-keeping. **TRADE-UNION**, or **TRADES-UNION**, combination among workmen having in view the settlement of the proportion which wages should bear to the profits of the employers, and the redress of grievances (see below). **TRADE-PROTECTION SOCIETIES** (see **COMMERCIAL REGISTER**). **TRADE-WINDS**, called also **TRADES**, winds which hold a certain steady course; winds in or near the torrid zone, which *n.* of the equator blow from the *n.e.*, and *s.* of the equator blow from the *s.e.* (see **WIND**).—**SYN.** of 'trade, *n.*': commerce; traffic; dealing; profession; occupation; office; employment; calling; business; vocation.

TRADE, BOARD OF: in the United States, an assoc. of business men for furtherance of trade, as by suggesting and encouraging suitable legislation in regard to tariffs, banking, insurance, shipping, etc.; a Chamber of Commerce (*q.v.*).

In the United Kingdom, the board of trade is a department or group of departments of government more correctly designated 'The Lords of the Committee of Her Majesty's Privy Council appointed for the Consideration of All Matters relating to Trade and Foreign Plantations.' In 1660 Charles II. created two separate councils for trade and for foreign plantations, which were consolidated 1672. In 1786 the now existing dept. was established for consideration of all matters relating to trade and the colonies. The board is now divided into five depart-

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ments: (1) statistical and commercial, (2) railway, (3) marine, (4) harbor, (5) financial. The presidentship has been held since 1864 by a cabinet minister.

The functions of the board of trade are partly ministerial, partly judicial, and have been greatly enlarged by successive statutes. The board is charged with the general superintendence of all matters relating to the mercantile marine; and with supervision of railways and railway companies, both as to their original formation and their working. Many matters relating to the interests of trade which come before other governmental departments are referred to the board of trade for information or advice: thus, there are communications with the foreign office regarding the negotiation of commercial treaties, and with the treasury regarding alterations in the customs.

A statistical dept. of the board collects and publishes tables of classified information regarding the revenues, population, commerce, wealth, and moral and economical condition of the United Kingdom and its dependencies, and prepares a selection from the statistics of foreign countries, and a monthly account of trade and navigation. All applications by companies or private persons for charters of incorporation are referred to the board of trade; and among its functions is the registration of joint-stock companies and of copyright in designs.

TRADE, LIBERTY TO: one of the rights incident to all persons by law in Great Britain and the United States. So absolute is this right that it is considered by courts of law to be an illegal and void covenant when a person, however deliberately, engages never to trade, inasmuch as it is against public policy to support it. In the sale of the good-will of a business, if a person engage absolutely not to carry on a particular business anywhere, his engagement is void; but it is competent to engage not to carry on a particular trade within a certain specified reasonable distance—as 20 or 30 m.—from a certain point, the reasonableness being estimated according to the nature of the trade and locality. If such an engagement were not legal, it would be impossible to negotiate the sale of the good-will of a business. Though, at common law, every man is free to carry on what trade he pleases, still there are many lawful trades subjected to certain restrictions, either ostensibly for purposes of revenue, or for protecting the public from certain evils attending such trades; e.g., see cross-references under **LIQUOR**: also **BEER ACTS**: **GUN-POWDER**, **LAWS RELATING TO**.

In Britain, the laws or customs of the ancient corporations and guilds, which formerly impeded trade by imposing certain conditions, were abolished 1835: the City of London, however, was excepted, and some of the ancient restrictions still flourish there (see **NAVIGATION LAWS**).

TRADE-MARK: symbol, figure, monogram, or other device affixed by a manufacturer to his goods as a distinguishing mark to indicate their origin and genuineness. The earliest trade-marks seem to have been the water-marks in paper. The most ancient known water-mark

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is found on a document dated 1351. The use of these marks is an important privilege, as concerns both producer and consumer. A T.-M. may comprise a newly coined word, as 'Pearline,' or a combination of words, as 'Yankee Soap,' or a combination of letters, as 'A B C.' A geographical name is not usable as a T.-M.; nevertheless, it may sometimes be unlawful to use such geographical name, as is seen in the judgment of the court in the case of the 'Akron Cement Co.' *vs.* the manufacturers of 'Onondaga Akron Cement.' The court held that while the formula 'Akron Cement' cannot be a T.-M., the employment of it to designate cement not made at Akron is a fraud both on the public and on the plaintiffs. But the line between a valid T.-M. and an invalid one is not in all the adjudged cases clearly perceptible. Thus, it has been held by courts that 'snow flake,' as a designation of a certain kind of biscuits or crackers, is a 'mere description,' and not a proper T.-M., while the formula 'Insurance Oil' is a valid T.-M. A corporate name, a firm name, etc., though they are not trade-marks, are protected by the law.—In order to facilitate proof of property in trade-marks, congress provides for their registration at the patent-office. The U. S. govt. has concluded with many foreign govts. treaties for mutual protection of trade-marks. The treaty with Great Britain provides that every citizen of the United Kingdom and of the United States shall, each in the country of the other, possess with regard to trade-marks the same rights as native citizens, or the same rights 'as are now granted or may hereafter be granted to the citizens of the most favored nation.'—See COPYRIGHT.

TRADE SCHOOL: school for teaching mechanic arts practically. It differs from a technological institute in that the latter is concerned not less with the theory (or scientific principles) of industrial arts than with the manual operations, while the T. S. undertakes to teach only manual dexterity. It differs also from a manual-training school (as that term is usually understood) in that the purpose of the T. S. is to teach trades, i.e., to make of the pupil a carpenter, brick-layer, etc., while the manual-training school is part of a system of 'symmetrical education,' i.e., of education of the bodily powers and aptitudes as well as of the mental and moral. Thus the T. S. is in fact designed to afford the advantages of trade apprenticeship: whatever instruction it affords outside of that is incidental. The T. S. of New York has day and evening courses of trade-instruction for 3-5 mos. After one term, young men, it is asserted, can earn partial if not full wages in a trade. Some associations of master-tradesmen, e.g., plumbers, as also some private firms, industrial colleges, asylums, reformatories, and the Pratt Institute of Brooklyn, N. Y., the Free Institute of Worcester, Mass., and the Drexel Institute of Philadelphia, conduct trade schools. The trades taught in the New York T. S. are bricklaying, plumbing, carpentry, painting, stone-cutting, blacksmithing, tailoring.—See TECHNICAL EDUCATION.

TRADE-UNION.

TRADE'-UNION: association of workmen for the purpose of securing as favorable conditions of labor as possible, and for mutual assistance in contests with employers. Under this designation trade-unions date from about the middle of the 18th c., and were successively formed in consequence of the gradual disintegration of the solidarity formerly existing between employers and workmen. This disintegration is more immediately attributable to the rapid development of trade, the transference of the mastership of the great industries into the hands of large capitalists, and especially the introduction of machinery; which completely revolutionized the system of labor: see **GUILD**.

Disputes between employers and workmen came to light after the great pestilence of 1349, when in England it was enacted that carters, plowmen, and agricultural servants generally should be content with their previous rate of liveries and wages; they were to continue to be paid in kind where payment in kind had been customary; they were forbidden to hire themselves for the day, but must take service for a year or other fixed period; a rate of wages was fixed for weeders, haymakers, mowers, and reapers; and their hiring was to be in public. In 1363, the diet and clothing of artificers and servants were fixed by act of parliament, and clothiers were required to make, and tradesmen to sell, cloth of a regulated quality at a regulated price. The 3d Edward III. c. 9, and the 3d Henry VI. are directed against combinations of workmen, but only in the building trades: in fact, against only the journeymen members of the (operative) masons' lodges. One of the ordinances, however, of the 'Master-Shearmen' of 1350 shows that, prior to this date, journeymen in this trade had had recourse to strikes, and it was consequently ordained that henceforth all such disputes be settled by the warden of the trade. In 1562, by the 5th Eliz., c. 4, all previous enactments bearing on the customs and usages of the craft-guilds were codified, and their provisions extended to all the handicrafts of the time. No one, it was ordained, could exercise either as master or journeyman any art or manual occupation, except he had been brought up therein at least seven years as an apprentice. No one was to be bound apprentice who was not under 21 years of age. For three apprentices there was to be one journeyman, and for every apprentice more than three, another journeyman. No journeyman was to be taken for less than a year, and no servant to leave or be put away under less than a quarter's warning. There were definite regulations for hours of work and rate of wages. The 1st James I. c. 6, extends the power of the justices and town magistrates to fix the rate of wages for all laborers and workmen whatsoever.

A 'Report and Minutes of Evidence on the State of the Woolen Manufactures of England,' 1806, July 4, explains how in the 18th c. woolen manufactures were carried on by small masters in their own houses, in villages or in detached places where, besides, they often cultivated a small piece of land. The number of such small masters in the

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environs of Leeds was then estimated at 3,500. Every master had served a seven years' apprenticeship. Though the 5th Eliz. was unknown, its regulations were fully observed. In Harmley, a cloth-workers' village of 4,000 to 5,000 inhabitants, there were 97 apprentices bound for seven years, and only four for a shorter period. As a rule, all worked in the master's house. It was allowable for the apprentice, at the completion of his seven years, to settle as a master, but usually he worked one or two years longer as a journeyman. Slackness of trade did not usually stop work. The master seldom worked to order, but sold his cloth in the 'cloth-halls,' of which there were two in Leeds. No cloth-worker could bring his wares to those halls unless he had served the regular apprenticeship. As a rule, journeymen were hired by the year, and besides board, lodging, and washing at their master's, had each an annual wage of £8 to £10. During a stagnation of trade, it was not customary to dismiss the journeymen, and losses were equalized all over the trade.

This system was entirely changed by machinery. The rich merchants became manufacturers, and erected mills. As early as 1720, according to a report of a committee of the house of commons 1757, the custom of assessing the wages by the justices appears to have fallen into disuse, a neglect which led to reduction of wages by the masters, and to combinations by the workmen. An act of 1725 prohibited such combinations, and by an act of 1726 justices were enjoined to fix the rate of wages. In consequence of a petition from the masters, the justices did not comply with the act of 1726. A riot among the weavers ensued, which involved losses estimated at £15,000 to £16,000. In 1756, the justices were by another act re-ordered to settle the wages in the woollen manufactures yearly. Permanent trade societies were not formed among the woollen workmen till that manufacture passed from the domestic to the factory system, when the masters began to set at naught the provisions of the 5th Eliz., and to employ in their mills workers who had served no apprenticeship, as also a large number of women and children, whose labor was much cheaper. The cloth-workers at Halifax, both small masters and journeymen, finding their bread taken from them, formed a Union or 'Institution,' as it was then called, 1796. Acts of parliament were passed 1799 and 1800 suppressing this Institution, and severely prohibiting all combinations of workmen; the effect of which was only to make the workmen combine under the cloak of Friendly Societies (q.v.). In response to a petition from the master manufacturers of w. and n. England, the 5th Eliz. c. 4, and all previous enactments of like nature were, by act of parliament 1803, suspended for one year in the woollen manufacture. This suspension was renewed in the next and following years, till in 1809 these laws were finally repealed. The workers again formed an 'Institution' in 1803, which spent £10,000 to £12,000 on petitions to parliament. The master manufacturers, finding that the Institution aimed at maintaining the 5th Eliz., required their

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workmen to leave that body, and on their refusing to do so, discharged them. On the repeal 1809 of the 5th Eliz. and previous acts to the same effect, combinations among workmen became chronic.

Of earlier date than the Cloth-workers Institution was the Shipwrights of Liverpool Trade Soc., and still earlier was that of the Hatters, who were specially protected by the 5th Eliz., 8th Eliz., and 1st James I., and who now felt aggrieved at the 'sweating system' which had been introduced in their trade early in the 18th c.; as also at the excessive number of apprentices who were crowding out the journeymen. In opposition to the efforts of the Workmen's Society, the Master Hatters, 1777, petitioned parliament for repeal of the legislative restrictions in regard to the number of apprentices, and for prohibition of combinations among the workmen; both of which points were conceded, within certain limits, by the 17th George III., c. 55. An inquiry by a committee of the house of commons into the state of framework-knitting brought out the fact, that for about 20 years wages in that trade had been constantly falling, while the prices of food had been rising. Two bills (1779 and 1812) for regulation of their trade having been rejected, the framework-knitters entered into a Union 1814. In calico-printing, the introduction of machinery affected the workmen most injuriously. In Lancashire there were 55 apprentices to 2 journeymen; in Dumbartonshire, 60 apprentices to 2 journeymen. By employing apprentices the masters saved a third in wages, and in case of work being spoiled by the boys, a proportionate deduction was always made from their wages.

Trade-unions soon spread over the kingdom, and gradually embraced nearly all the members of all the trades. Employers, on the other hand, leagued themselves into unions, and endeavored to counteract the trade societies by lock-outs and by mutual support. In 1802 was passed the 'Moral and Health Act,' called forth more immediately by the terrible epidemic fevers in n. England, especially in Manchester, resulting from the inhuman factory system there in operation. The Cotton Mills Act of 1819 limited the age of children admissible to factories to not less than nine years, and the hours of labor from the ages 9 to 16 to 12 hours a day, exclusive of meal-time, night-work being also prohibited. Lord Althorp's (better known as Earl of Shaftesbury—q.v.) Act of 1833 prohibited night-work (from 8.30 P.M. to 5.30 A.M.) to all persons under 18 years in cotton, woolen, worsted, hemp, flax, tow, and linen spinneries, and weaving-mills; and fixed the maximum hours of work from the ages 9 to 13 at 48 per week, and from the ages 13 to 18 at 69 per week. Four factory inspectors were also appointed, and invested with the penal jurisdiction of justices of the peace. In 1842, a Mining Act was passed prohibiting underground work by women in general, and by boys under 10 years, but imposing no restriction on the time of labor, nor on night-work. In 1843, the second report of the *Children*

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Employment Commission brought to light a frightful state of things. The Factory Act of 1844 reduced the working time for children employed in textile industries, and the Printing Works Act of 1845 contained similar provisions. In 1847 was passed the Ten Hours Act, applying to all young persons and women; and to check a 'relay' expedient by which it was sought to elude its provisions, an act was passed 1850 reducing the legal working day for all young persons and women to 6 A.M.—6 P.M., and fixing the meal-time within these hours. Gradually all trades in Britain, and following Britain, on the continent, were brought under the protection of more humane laws, a result due in large measure, directly or indirectly, to the action of trade-unions.

The organization of trades in Great Britain is now very thorough. The following table shows the numerical strength of several leading unions in the United Kingdom at the close of 1891: the returns are approximately correct, though not official.

Agricultural Laborers.....	15,000	Iron Founders.	15,000
Bakers.....	4,500	Iron Molders (Scotland)....	6,300
Boiler Makers and Iron		London and S. Cos. Labor	
Ship Builders.....	36,000	League	13,000
Boot and Shoe Riveters... ..	5,000	Miners (Northumberland)..	16,000
" " " " (Nat'l)	33,000	" (Durham).....	40,000
Bricklayers.....	12,700	National Miners' Federat'n	150,000
Carpenters and Joiners....	30,000	Operative Cotton Spinners	19,300
Chemical Workers... ..	10,000	Power-loom Weavers..	60,000
Compositors (London) ...	9,250	Railway Servants.	35,000
Dock, Wharf, etc., Laborers	40,000	Railway Workers' Union..	20,000
Engineers.....	70,000	Sailors and Firemen.....	78,000
Gasworkers and General		Stone-masons	12,500
Laborers.....	60,000	Tailors (Amalgamated)...	19,200
House Decorators and			
Painters.....	3,300		

In the United States, the first T.-U. was organized in New York 1803—the 'Journeyman Shipwrights' Soc.,' and the next appears to have been the 'House Carpenters' Soc.' of New York, 1806. A printers' union existed in New York 1817, and was incorporated 1818. Thurlow Weed (q.v.) visited Albany to procure its incorporation by the legislature. In his *Autobiography* he writes: 'I remember with what deference I then ventured into the presence of distinguished members of the legislature, and how sharply I was rebuked by two gentlemen, who were quite shocked at the idea of incorporating journeymen mechanics.' In Boston, Philadelphia, and other cities the organization of trade-unions came much later. As early as 1825 the project of a national organization of several trades was mooted, yet the unions continued local till 1852, when the 'National Typographical Union' was founded—later (1869) styled the 'International Typographical Union,' to signify its inclusion of the Canadian craftsmen. Other local unions followed the example of the printers, first the Hatters, 1854; then the Machinists and Blacksmiths, who formed an 'International Union of N. America' 1859; and the same year saw the institution of the 'National Founders' League,' later reorganized as the 'Iron Moulders' International Union of N. America;'

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and these and other unions of workers in iron not long afterward combined to form the powerful organization known as the 'Amalgamated Assoc. of Iron and Steel Workers of the United States.' The 'Brotherhood of Locomotive Engineers' arose 1864. As early as 1860, 26 trades were organized nationally. Since then, nearly all handicrafts have formed organizations coextensive with the country. In these unions, whether local or general, the special interests of the several trades alone were regarded as ends; and their common law, so to speak, took no cognizance of questions concerning the welfare of craftsmen or workmen in general: political questions were ruled out of order; *a fortiori* projects savoring of 'socialism' or 'paternalism in govt.' had no chance of obtaining a hearing in the unions. But in 1860 in the congress of the unions of Machinists and Blacksmiths a resolution was offered and received with some favor, proposing the shortening of daily labor to 8 hours. A convention of representatives of trade-unions, Philadelphia, 1861, Feb. 22, deliberated on the state of the country in view of the then impending civil war. The 'National Labor Union' (union of craftsmen belonging to all trades) was formed 1865 in a convention at which such questions as the 8-hour day, the national currency, the national debt, the public lands, etc., were discussed. But organized labor was not yet ready to combine for promotion of these objects, and the National Labor Union had a brief life. But it is worthy of note that at that convention of workmen the establishing of a national labor bureau was first publicly advocated. The first fruit of this general organization of the trades was the enactment by congress of the 8-hour labor law, 1868, Jan. 25, by which it was declared that '8 hours shall constitute a day's work for all laborers, workmen, and mechanics who may be employed by or on behalf of the govt. of the United States.' To the National Labor Union succeeded the 'Industrial Brotherhood,' another short-lived organization which came into existence 1874, Apr., at an Industrial Congress, Rochester, N. Y. The Industrial Brotherhood was the first general organization of trades to overstep the limits of skilled crafts and to invite to fellowship 'mechanics and *other laborers*.' The order of the Knights of Labor (see LABOR, KNIGHTS OF) was definitively constituted 1869, Dec. 28: at its annual convention, 1902, held in Nov., the membership of this order was reported 40,000. The 'Federation of Labor' was organized 1881: this body was reported by its pres., Samuel Gompers, to comprise (1902) 1,880 unions (local, national and international) with membership of 2,000,000. The Federation is not as close a union of trades and industries as is the order of the Knights of Labor: indeed the bond which holds to it some of the unions that make up its strength is of the feeblest kind, and merely nominal. Thus, it is not to be supposed that the Brotherhood of Locomotive Engineers is in any degree controlled or directed by or subordinate to the Federation of Labor.

The position of the trade-unionist may thus be stated,

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The capitalists' accumulations afford him an advantage which the laborer without association does not possess: the funds of the union are intended to supply this deficiency. As accessories, the unions collect funds for other purposes, e.g., benefit societies, insurance of tools, libraries, and reading rooms; but their trade objects are those with which we are here especially concerned. The following means of assisting and defending the trades associated are enumerated by the committee as now in general use: 1. Publishing periodically the state of the trade in different parts of the country; 2. Keeping registers of men unemployed and of employers wanting men; 3. Assisting men from town to town in search of employment; 4. Regulating the number of apprentices in the trade; 5. Maintaining men in resistance to employers; 6. Regulating number of working-hours, and preparing trade rules; 7. Organizing strikes.

The advocates of the unions insist that they are the only means by which workmen can defend themselves against the aggression of employers. It is urged that associations of employers are practically universal, and that their object is mainly to secure for themselves the largest possible share of the profits which are the product of capital and labor united. It is said further, that in the event of any depression of trade, the employers invariably attempt to reduce wages; and that when trade improves, they defer as long as possible the restoration of the former rate. Thus, workmen are the first to feel commercial disaster, and the last to benefit by better times. That in both these matters there is a constant gravitation against the workman seems admitted by most who have considered the subject; and there is difficulty in suggesting any effective resistance to the downward tendency, except that of combination. Trade-unionists point to many regulations in the interests of workmen which combination has enabled them to introduce, and while they freely admit that in many instances the contest between labor and capital has resulted in the apparent defeat of labor, yet they assert that, in the long-run, most of the points contended for have been gained. They maintain that, in very many trades, they have succeeded in preventing abuses, and that the unions have contributed, more than any other agency, to make 'the workman's life regular, even, and safe.' Bitter prejudices against trade-unions were created in the minds of the general public, and long maintained by accounts published of occasional cases, on the part of trade-unionists, of coercion, intimidation, rattening, and picketing. But to-day the struggle of workingmen for their rights is usually conducted without serious disturbance of the public peace, without violence or bloodshed.

The ancient common law left little freedom of combination to workmen for regulating wages, shortening the hours of labor, or otherwise bettering their condition. In England, the boasted freedom of our Saxon ancestors was very similar to that in the southern states of N. America before the secession war, since it was all enjoyed by the

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upper class, to whom the inferior persons were slaves; and the term freeman, still used in certain Brit. municipalities, of old distinguished those who were not slaves. The statutes of labor still retained a portion of this servitude, laying heavy penalties on workers in various trades who refused to work at a regular fixed remuneration—often, of course, below the market value, otherwise it would not require to be protected by penalties. By the Poor Law Act, too, those who would not work might be veritably enslaved by being compelled to labor in the service of any householder. It may be said, indeed, to have been the last stage of the emancipation of the working-classes from slavery when the Combination Act was repealed 1825. This act, which, after all, was a mild relic of the old laws for coercing workmen, subjected those who, whether verbally or in writing, entered into combinations for keeping up the wages of their labor, or limiting the hours of work, to be punished by imprisonment as criminals. There is no doubt that, in defiance of this act, secret combinations were held, which were more dangerous and cruel than any that have occurred since the repealing act of 1825, which rendered combination itself lawful, but punished any attempts to enforce the views of the combining workmen by violence or intimidation. But in England to-day, under the various Trade union Acts, employers and employed may lawfully do in combination all that they would be entitled to do as individuals. In the United States, too, the ancient rigor of the common law and the statutes has been much relaxed, and the tendency is toward a further thorough revision of existing codes, and bodies of law, in favor particularly of the workmen. Yet it is still the law of Mass. that a combination of workmen to raise their wages, and to enforce by overt acts a schedule of prices of labor, is a criminal conspiracy. N. Y. and Penn. were the first states to redress by law the grievances of the workmen. In N. Y. by act of 1870, labor-unions are declared lawful, as is also any peaceful combination in a trade or calling to increase or maintain a scale of wages; but if workmen combine to raise their wages by conspiring *to compel other workmen* to conform to rules established by the conspirators for the purpose of regulating the price of labor, they are indictable for conspiracy. The Penn. act of 1872 also declares trade-unions lawful; it provides that laborers, etc., as individuals, or as members of a society, may lawfully refuse to work for any employer when, in their opinion, the wages are inadequate, or the treatment received from employers is brutal or offensive, or when the continued labor of such workmen would be 'contrary to the rules, regulations, or by-laws of any club,' etc., to which the workmen may belong. —A very formidable strike was made on the principal railroad lines of the United States 1877, precipitated by a 10 per cent. reduction of wages. It was begun by the 'train hands' of the Baltimore and Ohio r.r., July 14, and eventually spread so as to involve 6,000–7,000 m. of road and 100,000 railroad men. The coal-miners of Penn. engaged (to the number, as

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reported, of 40,000) in a general strike at the same time. At Pittsburgh, Penn., the strikers defied the civil authorities and the militia was called out; militiamen and U. S. troops guarded railroad property in several states. At Pittsburgh the militia fired several volleys into the mob of strikers July 21. The mob then sacked gun-shops and warehouses and made an attack on the troops with small arms and 3 small cannons. Foiled in their effort to dislodge the military, the mob set fire to an oil train and pushed the blazing train toward the roundhouse in which the military were. The retreat of the militia to Alleghany City arsenal was harassed in every way. Incendiarism reigned 24 hours in Pittsburgh, and the railroad companies lost in property destroyed \$8,000,000—\$10,000,000, including more than 2,000 freight-cars with their contents burned. This strike gained no definite result, though a few special concessions in details were secured; but its general effect was to show each side the formidable character of its opponent—thus suggesting the desirableness of a mode of settling differences by some method less disastrous to both sides. The riots at Baltimore also were very serious: in one conflict with the militia 9 strikers were killed and 20 wounded: there were also conflicts between the strikers and the troops at St. Louis, Buffalo, and Chicago. Order was restored and trains were again running on most of the roads before the end of July.—Of labor-strikes in very recent years, that of the dock laborers in London 1889 was on many accounts among the most-memorable. The dock laborers ‘went out’ in the middle of August. To coerce the dock companies to accede to the demands of the men, various unions struck in sympathy—first the stevedores and lightermen, then other organized and unorganized trades, as tailors, bakers, gasmen, printers, metal workers: before the end of Aug. 150,000 workers were idle, and commerce was blocked. The leader of the strike was John Burns, and the men had the sympathy of all London and received material aid from all over the world. Cardinal Manning was throughout the strike a mediator and peacemaker. The companies were obliged to concede the demands of the dockers. The cost of the strike to all parties was not less than \$10,000,000.—See COMPETITION: LABOR: FACTORY: FACTORY ACTS: INTERNATIONAL, THE: BOYCOTTING: MACHINERY, POLITICAL ECONOMY OF: TRADE SCHOOL.

TRADITION, *n.* *tră-dîsh'ûn* [*F. tradition*, tradition—from *L. traditîo* or *traditîonem*, a delivering up—from *trado*, I deliver, I transmit—from *trans*, across; *do*, I give]: the transmission of events, doctrines, opinions, rites, etc., from father to son, through successive generations, by word of mouth; that which is so handed down (see RULE OF FAITH: INFALLIBILITY): old custom: *PLU.* things or deeds preserved only in the memories of successive generations, and not committed to writing. TRADI'TIONAL, *a.* *-ăl*, transmitted by word of mouth only; received by tradition; in *OE.*, observant of traditions. TRADI'TIONALLY, *ad.* *-ăl-lî*. TRADI'TIONARY, *a.* *-er-î*, derived from tradition; transmitted

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from age to age without writing. TRADI'TIONARY, n., or TRADI'TIONIST, n. -*ist*, one who acknowledges the authority of tradition. TRADI'TIONARILY, ad. -*er-ĭ-lĭ*. TRADITIVE, a. *trăd'ĭ-tĭv*, transmitted or transmissible from age to age by oral communication; traditional.

TRADITOR, n. *trăd'ĭ-tŏr* [L. *traditor*, a traitor—from *tradĕrĕ*, to give up—from *trans*, across; *do*, I give]: *literally*, a traitor; hence, among the *early Christians*, a name of infamy applied to those who delivered their Scriptures, etc., to their persecutors to save their lives.

TRADUCE, v. *tră-dŭs'* [L. *traducĕrĕ*, to lead across, to disgrace—from *trans*, across; *duco*, I lead or bring]: to misrepresent and abuse; to calumniate; to defame; in *OE.*, to propagate; to translate, as from a foreign tongue; to display; to lead astray. TRADU'CIAN, -*dŭ'shan*, a believer in traducianism. TRADU'CIANISM, the theory or doctrine that the soul as well as the body is propagated and not created. The origin of this theory is ascribed to Tertullian (q.v.), who explains and defends it in his book *On the Soul*, written after he had lapsed into the Montanist heresy. In opposition to others who had held the theory of the pre-existence of souls—of which pre-existing souls one is divinely infused, or, by some natural affinity, is attracted into each fetus so soon as it has been formed by generation in the procreation of man—Tertullian taught that souls are propagated by souls as bodies by bodies, and by the same or a simultaneous process. In another place he describes this origin of soul from soul as generation, and even of a class analogous to corporeal generation; and this more gross and material exposition of the theory of T. is sometimes called *Generationism*, which, however, is commonly classed as a totally distinct theory. A third hypothesis as to the origin of the soul suggested that, in the propagation of the human species, whenever a human body is formed by generation, the soul which is to animate that body is created, and by divine power infused into it. This theory is called *Creationism* (q.v.). Creationism is maintained by the argument that it accords with the scriptural distinction in origin between man's body and soul—the body being referred to the formation of materials from the earth, the soul being referred to the direct inbreathing of life from God: also by the argument that it accords with the indivisibility of the soul as a spiritual essence, while T. requires the division of a soul in the act of generating out of itself another soul. Inasmuch as T. is maintained by the argument that it is necessary to account for the transmission of a sinful nature from Adam to the whole race as his posterity (i.e., by community of essence), the advocates of creationism reply that the Lord Jesus, as sharing with man in the same community of essence, would thereby be a sharer in the human sinfulness of nature, which in fact he was not.—We may be content to say of this mystery, with St. Augustine, 'How the soul derives its being, I do not know.' It is possible that there may be a truth in both theories; for it is at least conceivable that the *body* is generated corporeally (traducian-

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ism), while the *spirit* or life-principle is given directly from God (creationism); whereupon by the instant and continuous close interaction of these two constituent elements of humanity, the *soul* arises as the personality of the individual man—recipient at once of the Divine life from God through the man's spirit, and of various human characters and tendencies by heritage from parentage through the body.—See ANTHROPOLOGY: DESCENT OF MAN: HEREDITY: ETC.—The discussion of these theories in the 4th and 5th c. was much promoted by the controversies on Manichæism: see MANICHEAN.—TRADU'CING, imp. TRADUCED', pp. -dūst'. TRADUCEMENT, n. censure; obloquy. TRADU'CINGLY, ad. -lī. TRADU'CER, n. -sēr, one who traduces. TRADU'CENT, n. -sēnt, slandering. TRADUC'TION, n. -dūk'shūn, in *OE.*, derivation from one of the same kind; propagation; conveyance. TRADUC'TIVE, a. -dūk'tiv, derivable; that may be deduced.—SYN. of 'traduce': to vilify; defame; disparage; depreciate; decry; slander; calumniate; detract; censure.

TRAFALGAR, *tra-fāl'gēr*, or *trá-fál-gár'*, CAPE: low promontory on the s. coast of Spain, about 29 m. w.n.w. of Tarifa (q. v.), on the Straits of Gibraltar. It is memorable for the great naval victory (1805, Oct. 21) by the British fleet under Nelson, over the combined fleets of France and Spain under the French commander Villeneuve and two Spanish admirals. The British force consisted of 27 sail of the line, 4 frigates, 1 schooner, and 1 cutter; the force of the French and Spaniards united amounted to 33 sail of the line, 5 frigates, and 2 brigs. The largest of the French and Spanish ships carried 30 guns more than the largest of the British ships. The engagement resulting in a splendid victory for the British (who captured 19 ships) was gained at the cost of the life of the greatest of English admirals: see NELSON.

TRAFFIC, n. *tráf'fík* [*F. trafiquer*, to traffic—said to be derived from *L. trans.* across. and *vices*, exchange: more probably of Celtic origin; *Lang. tráfi*, disturbance, trouble; *W. trafu*, to stir, to agitate]: interchange of goods, etc., between countries, communities, or individuals; commerce; trade; goods or persons passing to and fro along a road, railway, or canal: V. to buy and sell goods; to trade; to carry on commerce; to trade meanly or mercenarily. TRAF-FICKING, imp.: ADJ. bargaining; dealing; jobbing: N. the act of buying and selling goods. TRAF'FICKED, pp. -fíkt. TRAF'FICKER, n. -fík-ēr, one who trafficks; a trader; one who deals meanly or mercenarily.

TRAGACANTH, n. *trág'ă-kānth* [*L. tragacan'thum*—from *Gr. tragos*, a goat; *akan'tha*, a thorn]: the concrete juice or gum of several species of shrubby or herbaceous plants, usually in the form of white or yellowish semi-transparent flakes, of great toughness; the *Astrag'ălus vērus*, ord. *Legumīnōsæ*, sub-ord. *Papilīonācēæ*, found in Asia Minor and Persia, seems to be the chief source of the European tragacanth (see BASSORINE: GUM).

TRAGEDY—T-RAIL.

TRAGEDY, n. trāj'ĕ-dī [F. *tragédie*, a tragedy—from L. *tragœdia*; Gr. *tragōdia*, a tragedy—from *tragos*, a goat; *ōdē*, a song: so called because the actors of the early tragedies were dressed in goat-skins, or because a goat was the prize in the tragic contests]: a dramatic poem representing an event, or a series of events, in the life of an individual, generally having a fatal issue, and meant to impress on the mind some great moral truth (see DRAMA); the muse of tragedy: any event in which human lives are lost by murderous violence; a fatal and mournful event. TRAGEDIAN, n. trā-jē dī-ăn, a writer or an actor of tragedy. TRAGÉDIENNE', n. -dī-ĕn' or trā-zhā'di-ĕn' [F. *tragédienne*]: female actor of tragedy. TRAGIC, a. trāj'ĭk, or TRAGICAL, a. -ĭ-kāl [F. *tragique*—from L. *tragicus*; Gr. *tragikos*, tragic]: of or relating to or of the nature of tragedy; expressive of or resembling tragedy; fatal; calamitous. TRAGICALLY, ad. -lī. TRAGICALNESS, n. -nĕs, the quality of being tragic; mournfulness. TRAGI-COMEDY, n. trāj'ĭ-kôm'ĕ-dī, a dramatic piece having serious and comic scenes blended, and the issue not fatal or unhappy. TRAG'I-COM'IC or -COM'ICAL, pert. to tragi-comedy. TRAG'I-COM'ICALLY, ad. -lī.

TRAGICUS: see under TRAGUS.

TRAGOPAN, n. *träg'ō-pan* [Gr. *tragos*, a goat]: oriental bird of the *Phasianidæ* or pheasant family, having the head crested, but naked on the cheeks and around the eyes; a horn-like caruncle projecting backward from behind each eye, and a loose wattle, capable of being inflated, hanging beneath the bill. The tarsi are armed with a blunt spur in the male, unarmed in the female. The T. is a native of Asia, and is a bird of beautiful plumage, somewhat resembling a pheasant. The species *Cerionis satyrus* has been called the *Horned Pheasant*: it inhabits the higher parts of the Himalaya, Tibet, and some mountainous provinces of China. It is thought that the T. might profitably be domesticated in Europe and America.

TRAGUS, n. *trā'gŭs* [Gr. *tragos*, a goat]: in *anat.*, the small cartilaginous eminence at the entrance of the external ear, often beset with hair like the beard of a goat, hence the name. TRAGICUS, n. *trāj'ĭ-kŭs*, a short, flattened band of vertical muscular fibres on the outer surface of the tragus.

TRAIL, n. *trāl* [Sp. *trailla*, a drag for levelling ground: Dut. *treylen*, to drag a vessel by a rope: mid. L. *tragūla*, a sledge—from *trahērē*, to draw: comp. Gael. *triall*, a journey]: anything drawn to length or behind, as the train of a gown; that part of the stock of a gun-carriage which rests on the ground when the piece is unlimbered; the marks or scent left by any animal by which it may be pursued the track followed by a hunter: V. to hunt by tracking; to draw along the ground or behind; to draw; to drag; to be drawn out in length. TRAIL'ING, imp.: ADJ. drawing along the ground; floating, dragging, or waving. TRAILED, pp. *trāld*. TRAIL'ER, n. *-ēr*, one who or that which trails or requires support, as a plant. TRAIL-NET, a drag-net.

T-RAIL, *n.* *tê-rāl*: railway rail in the form of a T, having two flanges above, for giving a wide tread for the rolling stock.

TRAIL—TRAIN.

TRAIL, n. *trāl* [contr. of EN'TRAIL]: entrails of certain birds, as of a snipe or woodcock.

TRAIN, n. *trān* [OF. *trahin*; F. *train*, a train—from mid. L. *trahinārē*, to drag—from L. *trahērē*, to draw]: that which is drawn along behind; the long part of a dress behind; the tail of a bird; the after-part of a gun-carriage; a number of followers or attendants; a retinue; a regular method; a course; a series or succession, as of ideas; a state of procedure; orderly company; a procession; a line of gunpowder laid to fire a charge; on a *rail-way*, a number of carriages or cars drawn by an engine; in *OE.*, a stratagem; a trap: V. to draw; to form by instruction and practice; to educate and bring up; to break or tame for use; to form to any practice by exercise; to cause to assume a proper shape in growth, as a tree; to point a large gun in a particular direction; in *OE.*, to draw along; to invite; to allure; entice; to draw by artifice or stratagem; to draw from act to act by inducements. **TRAIN'ING**, imp. teaching and forming by practice: N. process of teaching or forming by practice; operation or art of forming young trees to a wall or espalier: preparation of men for athletic exercises, or horses for running a race (see below): disciplining of troops. **TRAINED**, pp. *trānd*: ADJ. having a train; brought up or reared by practice. **TRAIN'ABLE**, a. *-ā-bl*, capable of being trained. **TRAIN'ER**, n. *-ēr*, one who trains—generally restricted to one who prepares another for the performance of feats requiring certain physical qualities, as a horse for racing, or a pugilist for a prize-fight. **TO TRAIN UP**, to educate by teaching and practice. **TRAIN OF ARTILLERY**, a number of large guns, mortars, etc. **TRAIN-BAND** (properly, trained band), formerly, a band or company of militia. The train-bands of London were chiefly composed of apprentices; and their unruly doings formed the subject for many facetious plays and tales. In the civil wars the train-bands sided with the parliament; and Charles II. restored the militia on its old local footing. **TRAIN-BEARER**, one who holds up the train of a distinguished person. **TRAINING SCHOOL**, a school in which pupils are trained for a particular pursuit or object; in Britain, school in which teachers are educated; a training college (see **NORMAL SCHOOL**). **RAILWAY TRAIN**, a line of carriages or trucks, or both, drawn by an engine and tender on a railway. **DOWN-TRAIN**, in *Britain*, a train which runs from the capital to the provinces. **UP-TRAIN**, in *Britain*, a train which runs from the provinces to the capital. **THROUGH-TRAIN**, a train which runs from terminus to terminus, or from one system on to another without change of carriages.

TRAIN, *trān*, **GEORGE FRANCIS**, author: b. Boston, 1829, Mar. 24. He was engaged for many years in commercial business in Boston and in Australia; undertook to establish street railroads in England, in Birkenhead and London, 1859; made several trips around the world and lectured extensively on almost every conceivable subject; and has long been noted for his eccentricities. He has published numerous works and addresses.

TRAINING—TRAITOR.

TRAIN'ING, in an Athletic and Sporting Sense: preparation for athletic exercises or for some special line of bodily activity—implying the acquisition of vigorous health. The term is applied in reference to men, horses, and dogs: A person is said to be trained 'in condition,' when he has by certain processes rendered his frame as fit as it is possible for it to be, for performing some feat of strength or endurance—e.g., a trial of speed, a rowing match, a wrestling match, or any other prolonged exertion. For such purposes, the T. is often long and severe. It being necessary to divest the muscles of every particle of fatty tissue which can possibly be spared without direct injury to the health, it often happens that many pounds of flesh must be lost; and severe and continued exertion is necessary—the body being wrapped in thick suits of flannels, denominated 'sweaters.' Rigid abstinence also is requisite in certain departments of diet; e.g., no matter how thirsty the person in training may be, after perhaps ten miles' rapid walking in a triple suit of sweaters, he is allowed to drink only very sparingly, for though he may have taken off pounds of flesh by profuse perspiration, one glass of ale might undo the whole effect. Great attention to diet is necessary. Indeed, much of the system has been aptly expressed as consisting in the resolute performance of the three cardinal virtues—temperance, soberness, and chastity.—Almost the same course is pursued in training animals; and whether for hunting or racing, horses and dogs have to submit to a course of T. to bring them into 'condition.' The Turkish bath, as a means of procuring the necessary reduction of flesh without excessive labor, has been found an efficient ally. Out of 'condition,' the muscles are flabby, confused and coated with fat; the skin dead and lifeless; the eye dull and heavy; the lungs laboring, and the movements slow. In 'condition,' the muscles stand out hard, clear and defined; the tendons show like cords; the skin is clear, and ruddy; the eye bright; the lungs play with unrestrained freedom; and the whole frame is endued with vigor and perfect activity. See Maclaren's *Training in Theory and Practice*.

TRAIN-OIL, n. *trān'oyl* [Dan. and Sw. *tran*; Ger. *thran*; Dut. *traan*, train-oil]: an oil obtained from the fat or blubber of the whale.

TRAIT, n. *trāt* or *trā* [F. *trait*, feature—from L. *tractus*, pp. of *trahĕrĕ*, to draw]: a line; a stroke or touch; a feature, or peculiar feature, as of character.

TRAITOR, n. *trā'tēr* [OF. *traïtor*; F. *traître*, a traitor—from L. *tradĭtor*, a traitor; *tradĕrĕ*, to betray—from *trans*, across; *do*, I give]: one who abandons a cause which he was bound to defend, as of his sovereign or country; one guilty of treason; one who betrays his trust. **TRAI'TORLY**, a. -*lĭ*, in *OE.*, treacherous; perfidious. **TRAI'TOROUS**, a. -*ūs*, guilty of treason: treacherous; perfidious. **TRAI'TOROUSLY**, ad. -*lĭ*. **TRAI'TOROUSNESS**, n. -*nĕs*, the quality of being traitorous; treachery; also **TRAI'TORISM**, n. -*izm*. **TRAI'TRESS**, n. -*trĕs*, a woman who betrays her country or her trust.

TRAJAN.

TRAJAN, *tră'jan* (MARCUS ULPIUS TRAJANUS, *măr'kūs ŭl'pī-ŭs tră-jă'nŭs*): fourteenth Roman emperor: prob. A.D. 53-117, July (reigned 98-117); b. Italica (Alcala), near Seville (Spain); of a family probably of Roman origin. He was early trained to arms, becoming a prominently successful leader in the Parthian and German campaigns, during the reigns of Titus and Domitian. He was rewarded for his soldierly services by promotion to the offices of pretor and consul (91), and was ultimately adopted (97) by Nerva (q.v.) as his colleague and successor. T. became sole ruler 98, Jan., and celebrated his accession by the largess (somewhat less than usual) to the soldiers, but extended by him to the Roman citizens also and their children; and he made large provision out of the imperial treasury for rearing the children of poor freemen in Rome and other Italian towns, with the view of encouraging increase of population. In 101, Rome for the first time beheld its emperor leading forth his legions in person on a career of conquest, when T. set out on his first campaign against the Dacians who had exacted tribute from Rome since Domitian's time. The struggle was long and destructive; the emperor's opponents were valiant warriors, and headed by an able leader, their monarch, Decebalus; but the Romans at last gained decisive superiority; and in a subsequent campaign (104-5) completely subdued their opponents, whose country thenceforth became the Roman province of Dacia, and was secured by partial colonization. This conquest, the first since the death of Augustus, was celebrated, on T.'s return to Rome, by a superb triumph, and by games on a most extensive scale, which continued for four months. In the arena 10,000 gladiators contended, and 11,000 beasts were killed. Thirst for dominion again impelled T. to the east in 106. Landing in Syria, he marched n., received on his way the submission of numerous princes, possessed himself of Armenia, which he made a province of his empire, and hugely gratified the Roman senate with long lists of monarchs, never before heard of, who had bowed to their sway. The record of the events of the next seven years of T.'s reign is extremely defective, the few notices in Dion Cassius and others being insufficient for a consecutive narrative. In 115, he again set out from Syria, directing his march against the degenerate Parthian empire; took Ctesiphon almost without a struggle; and descending the Tigris, and subduing the tribes on both banks, became the first and only Roman general who navigated the Persian Gulf. On his return, he found that, like the bent reed which recovers its position when relieved from pressure, the peoples of Mesopotamia, n. Syria, and Arabia required to be again and more thoroughly subdued. This being done, and Parthia again conquered, T., sinking under a combination of dropsy and paralysis, which had long afflicted him, attempted to reach Italy, but was overtaken by death at Selinus, in Cilicia. Though most of T.'s reign was spent in gratification of his warlike ambition, the internal administration was careful, thorough, and sensible; the administration of justice was vigorous and impartial;

TRAJAN'S COLUMN—TRAJAN'S WALL.

that of finance was equally acceptable; informers (*delatores*) were severely punished, and peculating governors of provinces rigorously prosecuted. The improvement and beautifying of Rome—favorite occupation of the emperors—was carried on: the empire was traversed in all directions by new military routes, canals and bridges were constructed, new towns built, the Via Appia was restored, the Pontine Marshes partially drained, the magnificent 'Forum Trajani' erected, and the harbor of Centum Cellæ (Civita Vecchia) constructed. T. was one of the great historical road-makers.—Even if there were not abundant evidence of the sincere desire of T. to increase the comfort and happiness of his subjects, the customary wish formally uttered on the occasion of an emperor's accession, that he might be 'happier than Augustus, better than Trajan' (*Augusto felicior, Trajano melior*), would suffice for proof. In his personal character, T., a born soldier, was singularly simple, sincere, frank, and courageous. He, as also his admirable wife Plotina, detested pomp. He returned, almost ostentatiously, to the old republican simplicity in his own habits and in his imperial procedure—making himself freely accessible to his subjects and to his soldiers. He made his soldiers his comrades; yet it was known that no military detail escaped the emperor's eye, and that the least violation of discipline would meet unwavering justice. Pliny praises T. as the great military law-giver and the founder of discipline in the Roman army. His popularity with his soldiers and with the citizens was unbounded.—During T.'s reign, there was a mild persecution of the Christians; and taking into account that T. naturally shared the general belief that Christianity was a novel and perilous species of fanaticism, his conduct toward it may perhaps be almost deemed moderation.

- **TRAJAN'S COLUMN:** celebrated column at Rome, reared A.D. 114 by the Roman senate and people, in honor of Emperor Trajan. It is considered not only the greatest work of its architect, Apollodorus, but one of the noblest structures of its kind ever erected. The pedestal is covered with bas-reliefs of warlike instruments, shields, and helmets; and a very remarkable series of bas-reliefs, forming a spiral round the shaft, exhibits a continuous history of the military achievements of Trajan. These are in excellent preservation, and, independently of their beauty as works of art, they are invaluable records of ancient costume. A spiral staircase in the interior of the column leads to its summit. The height of the entire column is 132 ft. It still stands erect in all its ancient beauty amid the ruins of Trajan's forum. The summit was originally crowned by a colossal statue of the emperor, which has been incongruously replaced by one of the apostle Peter.

TRAJAN'S WALL: line of fortifications stretching across the Dobruǝscha from Czernavoda, where the Danube bends n., to a point on the Black Sea coast near Kustendji. It consists of a double in some places triple, line of ramparts of earth, 8½ to 11 ft. in height on the average (occasionally of 19½ ft.). bounded along its n. side by a

valley, which, being generally marshy, and abounding in small lakes and pools, serves admirably the purpose of a fosse. This valley was long erroneously supposed to have been at one time the channel by which the Danube emptied; and a scheme for utilizing it by construction of a canal to provide a more commodious water-communication with the Black Sea, instead of the long and troublesome navigation by the Sulina mouth, has been frequently mooted, and is undoubtedly practicable; but the cost has hitherto been a bar to its execution. During the war of 1854 Trajan's Wall became an important line of defense on the invasion of the Dobrudscha by the Russians; and the invaders were twice defeated in attempts to pass it—at Kostelli (Apr. 10) and Czernavoda (Apr. 20-22).

TRAJECT, v. *trǎ-jěkt'* [L. *trajectus*, thrown over or across—from *trans*, over; *jactus*, pp. of *jacĕrĕ*, to throw]: to throw or cast through: N. *trǎj'ěkt*, in *OE.*, a ferry; passage for water-carriage. TRAJECT'ING, imp. TRAJECT'ED, pp. TRAJECT'ION, n. *-jěk'shŭn*, a throwing or casting over; transportation. TRAJECT'IVE, a. *-tĭv*, in *gram.*, applied to a verb which governs the dative. TRAJECT'ORY, n. *-tĕr-ĭ*, in *math.*, the curve or path which a body describes when projected into space and continuously acted on by constant or varying forces: thus, the trajectory of a body projected obliquely for a little distance above the earth is approximately a parabola (it would be accurately so were space void and the centre of gravity of the earth infinitely distant); and the trajectories of the planets are approximately ellipses (see PROJECTILES, THEORY OF). A trajectory in mathematics is any plane curve which cuts at a given angle a series of plane curves of the same species and having a common origin.

TRALEE, *tra-lĕ'*: seaport and borough of Ireland, chief town of the county Kerry; on the river Lee, about a mile from the point at which it enters the sea; 162 in. w.s.w. from Dublin. The origin of T. was due to the building of a castle, and the foundation of a Dominican convent by the Geraldine family, 1213; and somewhat later a considerable house of the order of Templars was established. The town is well built and has many public buildings. There is large traffic in grain and agricultural produce; annual exports amounting to £200,000, imports to about £150,000. There is a ship-canal, by which vessels discharge their cargoes close to the town.—Pop. (1871) 9,506; (1881) 9,396; (1891) 9,318—mostly Rom. Catholics.

TRALL, *trawl*, RUSSELL THACHER: physician: 1812, Aug. 5—1877, Sep. 23; .b. Vernon, Conn. He studied medicine, and 1840 began its practice in New York, but soon substituted a water-cure treatment for that by drugs, and 1843 opened an establishment for this treatment. In 1853 he founded the New York Hygeio-Therapeutic College, a medical school for men and women, subsequently removed to Florence, N. J. He was the editor of the *Hydropathic Review*, and author of many works advancing his views on this subject.

TRALUCENT-TRAMP.

TRALUCENT, TRALUCENCY: OE. forms of TRANSLUCENT, TRANSLUCENCY.

TRAM, n. *trām* [prov. Eng. *tram*, a kind of coal-wagon: Low Ger. *traam*, the handle of a wheel-barrow: OHG. *tram*, a beam]: the shaft of a cart, wheel-barrow, or the like; a coal-wagon; one of the rails or tracks of a tram-road; *familiarly*, a tramway-car. TRAM'ROAD or -WAY, a road prepared for easy transit of carriages or wagons by forming wheel-tracks of smooth beams of wood, blocks of stone, or plates of iron (the earliest form of railway). Also, grooved iron rails laid in a public street or road, in which the flanged wheels of tramway-cars, called in the United States street-cars, may run smoothly; a street railway: this form of railway originated in the United States.

TRAM, n. *trām* [L. *trama*, weft]: double silk thread in which two or more singles are twisted together in a direction contrary to the twist of the singles—used only as weft (see SILK).

TRAMA, n. *trā'mă* [L. *trāma*, the wool or filling of a web]: in *bot.*, the central tissue of the lamellæ of gill-bearing fungi.

TRAMMEL, n. *trām'měl* [It. *tramaglio*; Sp. *trasmallo*; F. *tramail*, a fishing-net of two or three layers—from L. *trans*, through, or more probably *tres*, three; *macūla*, the mesh of a net]: a kind of long net, called a Trammel-net (q.v.); a shackle, especially one of a kind used in teaching horses to amble; anything that hampers or confines; an impediment; an instr. for drawing circles, curves, and ovals: V. to confine or restrain; to hamper; to shackle. TRAM'MELLING, imp. TRAM'MELLED, pp. *-mēld*.

TRAMMEL-NET: kind of net resembling the drift-net used in the Herring-fishery (q.v.), but anchored and buoyed at each end, the back-rope supported by small cork-floats, and the foot-rope kept close to the ground by weights. The length varies from 60 to 900 ft. A variety of trammel-net, used chiefly in w. England and in Guernsey, consists of three long nets fastened together at top, bottom, and ends; called in parts of Cornwall a *tumbling-net*.

TRAMONTANA, n. *trā-mōn-tā'na* [It.]: a common name given to the north wind in the Mediterranean.—The name is also applied to a peculiar cold and blighting wind in the Archipelago.

TRAMONTANE, a. *trā-mōn'tān* or *trām'ōn-tān* [It. *tramontano*, beyond the mountains—from L. *trans*, beyond; *mons* or *montem*, a mountain]: lying or being beyond the mountains—that is, the Alps—originally used by the Italians; hence, foreign; barbarous: N. one living beyond the mountains.

TRAMP, v. *trāmp* [nasalized form of Ger. *trapp*, *trapp*, representing the sound of the footfall: Low Ger. and Ger. *trampen*, *trampeln*, to stamp: Dut. *trappen*; Sw. *trampa*, to trample]: to tread under foot; to travel over on foot; to wander about on foot: N. the sound of walking, as the *tramp* of feet; a walk or journey; a stroller; a workman of the lower class, journeying on foot from place to place in

search of employment: a vagrant; a beggar (see VAGRANT; BEGGAR; POOR, THE). TRAMP'ING, imp. TRAMPED, pp. *trämp't*. TRAMP'ER, n. -*ér*, one who tramps; a vagrant. TRAMPLE, v. *trämp'l*, to tread under foot; to tread down; to treat with contempt and insult; to tread with force and rapidity: N. a treading under foot with contempt. TRAMP'LING, imp. -*ling*: ADJ. moving regularly and more or less loudly. TRAMPLED, pp. *trämp'ld*, trodden under foot. TRAMP'LER, n. -*lér*, one who tramples.

TRAM-ROAD or -WAY: see under TRAM.

TRANCE, n., or TRANSE, n. *trāns* [OF. *transi*, fallen into a swoon: F. *transe*, a swoon: It. *transire*, to pass over, to fall into a swoon: L. *transitus*, a passing over; *transirē*, to pass over—from *trans*, across; *irē*, to go]: a state of the body in which the soul seems to be rapt in visions; a total suspension for a time of sensation and voluntary motion, while the heart and lungs continue to act; a state of extreme surprise or terror: V. to entrance; to charm. TRAN'ING, imp. TRANCED, pp. *trānst*, being or lying in a trance. TRANCEDLY, ad. *trāns'ēd-lī*, in the manner of one in a trance.—*Trance*, or 'morbid sleep,' differs from natural repose in duration; in profound insensibility to external impressions; in occurring after excitement and the exaltation of certain instincts, chiefly the religious and amative, rather than after fatigue or exhaustion; and in being the concomitant or symptom of diseases of the nervous system. The attitude, aspect, lowered respiration, and circulation of the entranced resemble those of the sleeper. But there are many exceptions to this observation. A girl who remained dormant 13 years, though she grew from a child to a woman in that time, was corpse-like in appearance, had locked-jaw, and there was almost total suspension of the signs of life. But while a person cannot be roused from this condition by the most powerful stimulants, by an electric shock, or even, it is affirmed, by a surgical operation, thought or dream goes on uninterruptedly, and is more continuous and coherent in character than in ordinary sleep. So connected and real do these visions appear to the ecstatic that they are generally accepted as true events, revelations, or impressions, received during a brief visit to another world. T. has occurred epidemically during periods of great religious fervor or of superstition; and whole classes of persons are described as having preached while asleep, in the insurrection of the Cevennes (q.v.). A similar phenomenon was observed 1865 in those affected by hysteromania at Morzine, in Savoy. T. has been divided, according to the intensity of the symptoms, into (1) *Death-trance*, where neither the heart nor lungs act; where the temperature of the body falls; where no sustenance is taken, and the inner dream-life is the only vestige of vitality. Engelbrecht, who was subject to T., wrote a book descriptive of this inner life, during which he believed himself to be transported to supernatural, if not to celestial, regions. (2) *Trance-coma*, where the breathing and action of the heart are feeble, but perceptible; the joints flexible; but where

TRANI—TRANQUIL.

the external senses are not awake, and where the patient cannot be roused. (3) *Trance-sleep*, where, except in the insensibility to external stimuli, and in the length of the suspension of volition, little abnormal is noticed. As these states often succeed hysteria, nervous and other diseases, the bodies of the supposed dead are for a time, in certain countries, so placed as to be watched, and in circumstances favorable to resuscitation; and they should be so dealt with always: see DEATH.—See Mayo, *On the Truths contained in Popular Superstitions*; Figuier, *Histoire du Merveilleux*.—See SLEEP: CATALEPSY: HYSTERIA: HYPNOTISM.

TRANI, *trá'nē*: maritime city of s. Italy, in the province Terra di Bari; 25 m. n.w. of Bari. It is surrounded by a wall with towers and moats, and entered by three gates. T. is an archbishop's see, and has a handsome cathedral, convents, a court of appeal, a theatre, and a strong castle. The streets are wide, well built, and paved with flag-stones. There is a handsome square. There is considerable trade in oil, wine, corn, and cotton, which last is also manufactured here.

T. comes into notice first when it submitted to the Normans 1053: it was then the chief town of a vast county, and was an important harbor in the time of the Crusades. Under the kingdom of Italy it has again begun to prosper, and promises to become an emporium of the commerce of the Levant, as in the middle ages.—Pop. (1881) 25,173.

TRANK, n. *trǎngk* [etym. doubt.]: in *glove-mak.*, an oblong piece from which the shape of the glove is cut on a knife in a press.

TRANNEL, n. *trǎn'něl*: a treenail: see under TREE.

TRANQUEBAR, *tráng-kwē-bár'* (corruption of *Tallan-gambadi*): seaport-town on the e. coast of Brit. India, 155 m. s. of Madras. It stands on a small bay, and is backed by a well-wooded and cultivated country; is a healthful station, much cooler than Madras, and has therefore been made a convalescent depot. The town is surrounded by walls with bastions, and is further protected by the fort of Dansborg. The territory of T. has 15 sq. m.; and produces rice, the cocoa-nut and other palms, the mango, and a variety of fruits. The town has much declined from its former commercial importance. The territory belonged in the 17th century to the Danes, was taken by the British 1807, restored 7 years later, but finally passed by purchase into the hands of the British 1845.—Pop. of town about 25,000.

TRANQUIL, a. *trǎn'kwǐl* [F. *tranquille*—from L. *tranquillus*, calm, serene: It. *tranquillo*]: free from strife or agitation; calm; peaceful; quiet; undisturbed. TRAN'QUILLY, ad. *-lǐ*. TRANQUILLITY, n. *trǎn-kwǐl'łǐ-tǐ*, freedom from disturbance or agitation; a calm state; quietness. TRANQUILLIZE, v. *trǎn'kwǐl-iz*, to quiet; to calm or soothe; to allay agitation. TRAN'QUILLIZING, imp. TRAN'QUILLIZED, pp. *-izd*. TRAN'QUILLIZINGLY, ad. *-zǐng-łǐ*. TRAN'QUILLIZER, n. *-i-zér*, one who or that which tranquillizes.

TRANS—TRANSCEND.

TRAN'QUILLIZA'TION, n. -zā'shŭn, the act of soothing or state of being soothed or calm.—**SYN.** of 'tranquillize': to calm; soothe; still; compose; appease; quiet; pacify.

TRANS-, *trāns*: a Latin prefix which, with its form **TRA**, signifies across; over; beyond; through; completely; from one to another; complete change, as *Transatlantic*, *transfuse*, *transmute*, etc.

TRANSACT, v. *trāns-ākt'* [L. *transactus*, carried through, settled—from *trans*, through; *actus*, pp. of *agĕrĕ*, to drive]: to carry through; to complete; to perform; to manage, as business; to conduct matters. **TRANSACT'ING**, imp. **TRANSACT'ED**, pp. **TRANSAC'TION**, n. -āk'shŭn [F.—L.]: the management of any affair; the performing of any business; that which is done; a proceeding; a process. **TRANSAC'TOR**, n. -tĕr, one who transacts.

TRANSALPINE, a. *trāns-āl'pĭn* [L. *trans*, across, and Eng. *Alpine*]: beyond the Alps, in regard to Rome—viz., on the north of the Alps; opposite of *Cisalpine*.

TRANSATLANTIC, a. *trāns'āt-lān'tĭk* [L. *trans*, across, and *Atlantic*]: beyond or across the Atlantic, as *Transatlantic* countries, a *Transatlantic* steamer.

TRANSCALENT, a. *trāns-kāl'lēnt* [L. *trans*, across; *calens*, being warm; *calĕrĕ*, to be warm]: permitting the passage of heat. **TRANSCA'LENCY**, n. -lēn-sĭ, the state of being transealent.

TRANSCAUCASIA, *trāns-kaw-kā'shĭ-a*: that portion of Caucasia proper which lies s. of the Caucasus (q.v.), the portion to the n. being called *Ciscaucasia*. **T.** comprises 8 governments: chief town, Tiflis.

TRANSCEND, v. *trān-sĕnd'* [L. *transcendĕrĕ*, to climb or pass over—from *trans*, beyond; *scando*, I climb]: to rise above; to go beyond; to surmount; to surpass; outdo; excel. **TRANSCEND'ING**, imp.: **ADJ.** rising above; surpassing. **TRANSCEND'ED**, pp. **TRANSCEND'ENT**, a. -ĕnt [L. *transcendens* or *transcenden'tem*, climbing over]: very excellent; supremely excellent: among the *Schoolmen*, not included in one of the ten Categories (q.v.): in the philosophy of Kant (q.v.), transeending experience, as the idea of God. **TRANSCEND'ENTLY**, ad. -lĭ. **TRANSCEND'ENCE**, n. -ĕns, or **TRANSCEND'ENCY**, n. -ĕn-sĭ, superior excellence; supereminence. **TRANSCENDENTAL**, a. *trān'sĕn-dĕnt āl*, supereminent; applied by Kant to the various forms, categories, or ideas which are regarded to be native elements of human thought, and which are manifested in experience only, though they are not products of experience, as Time, Space, etc.; metaphysical; hence, abstruse; extravagant; absurd. **TRAN'SCENDENT'ALLY**, ad. -lĭ. **TRAN'SCENDENT'ALISM**, n. -āl-ĭzm, that system of philosophic inquiry which is identified with the name of Kant, and in which the primary principles of knowledge are ascertained *a priori* (see **TRANSCENDENTAL**); that kind of investigation or use of language which is vague, obscure, or extravagant. **TRAN'SCENDENT'ALIST**, n. one who believes in or adheres to transcendentalism.—**SYN.** of 'transcend': to exceed; outgo; outstrip; excel; surpass; surmount,

TRANSCENDENTAL--TRANSEPT.

TRANSCENDENTAL — TRANSCENDENT [see **TRANSCEND**]: employed by various Schoolmen, particularly by Duns Scotus (q.v.), to describe the conceptions that, by their universality, rise above or transcend the ten Aristotelian Categories (see **CATEGORIES**). Thus, according to Scotus, *Ens*, or Being, because it is predicable of Substance and Accident alike, of God as well as of the World, is raised above these by including or comprehending them; it has the same relation to the sum of the Categories as the *summum genus* to the various genera within a single category—Relation (*summum genus*) to the classes of Related things (included genera). Further, the predicates assumed by Scotus to belong to *Ens*, or simple existence—viz., the One, the True, the Good—*Unum*, *Verum*, *Bonum*—are styled transcendent, because applicable to *Ens* before the *descent* is made to the ten classes of real existence.—In later times, since Kant, the word 'Transcendental' has been largely used as equivalent to the philosophical meaning of *a priori*. See **COMMON SENSE**, **THE PHILOSOPHY OF**; **INSTINCT**.

Between the hitherto convertible terms Transcendental and Transcendent, Kant himself drew a distinction, of considerable importance in understanding his own system. By the word 'Transcendental' he designates the various forms, categories, or ideas assumed to be native elements of human thought; implying that, though they are not products of Experience, they are manifested only in experience; such are Space and Time, Causality, etc. The word 'Transcendent' Kant reserves for those among the transcendental or *a priori* elements that altogether transcend experience. They may seem to be given in experience, but they are not really given. Such are the 'Ideas of the Pure Reason,' God, an Immaterial Soul, etc. Transcendental elements, when legitimately applied to experience, as Causality and Relation, are called Immanent.

TRANSCRIBE, v. *trăn-skrīb'* [L. *transcribere*, to transfer in writing—from *trans*, over; *scribo*, I write]: to write over again, or in the same words; to copy. **TRANSCRIBING**, imp. **TRANSCRIBED'**, pp. *-skrībēd'*. **TRANSCRIBER**, n. *-bēr*, one who transcribes. **TRANSCRIPTION**, n. *trăn-skrīp'shŭn* [F.—L.]: the act of copying; the copy made; in *music*, the adaptation of a composition for a particular instrument. **TRANSCRIPT**, n. *trăn skript* [L. *scriptus*, written]: a copy; anything written from and according to an original; **TRANSCRIP'TIVE**, a. *-tīv*, relating to or being a copy. **TRANSCRIP'TIVELY**, ad. *-lī*.

TRANSE, *trăns*: the old and proper spelling of **TRANCE** (q.v.).

TRANSED, a. *trănst*: OE. for **ENTRANCED**.

TRANSEPT, n. *trăn'sĕpt* [L. *trans*, across; *septum*, a fence, an inclosure]: the portion of a cruciform church between the nave and the choir, which projects at right angles to the body, forming the arms of the cross.

TRANSFER—TRANSFORM.

TRANSFER, v. *trăns-fēr'* [L. *transfer're*, to transport—from *trans*, over; *fero*, I bear or carry]: to convey from one place or person to another; to make over; to convey, as a right from one to another; to sell; to convey (a writing, drawing, or the like) from one surface to another by means of transfer-paper, as to a lithographic stone. **TRANSFER**, n. *trăns'fēr*, the conveyance of a thing from one place or person to another; the conveyance of a right, title, or property from one person to another; the placing or conveyance from one position, place, or condition into another; the reversed mark or impression made on a lithographic stone. **TRANSFER'RING**, imp.: N. the act of conveying from one to another, as a right or property. **TRANSFERRED'**, pp. *-fêrd'*. **TRANSFER'ER**, n. *-rêr*, one who transfers. **TRANSFER'ABLE**, a. *-fêr'ă-bl*, or **TRANSFER'RIBLE**, a. *-rî-bl*, that may be conveyed from one to another; negotiable, as a bill of exchange. **TRANSFER'ABILITY**, n. *-bîl'î-tî*, or **TRANSFER'RIBIL'ITY**, n. quality of being transferable. **TRANSFEREE**, n. *trăns-fêr-ê'*, the person to whom a thing is transferred. **TRANS'FERENCE**, n. *-êns*, the act of conveying from one to another; the passage of a thing from one place to another; in the *law of Scotland*, the step by which a pending suit is transferred from a person deceased to his representative. **TRANSFER-BOOK**, a register of transfers of shares or stocks. **TRANSFER-DAYS**, the days on which stock can be sold out or transferred at the Bank of England. **TRANSFER-PAPER**, prepared paper on which lithographers impress, write, or draw their designs, from which they are impressed or put upon the stone, and then printed from; fine unsized paper on which copies of recently written letters are impressed by the copying-machine.—**SYN.** of 'transfer, v.': to remove; transport; alienate: estrange; sequester; sell; deliver.

TRANSFIGURE, v. *trăns-fîg'ūr* or *-fîg'êr* [F. *transfigurer*, to transfigure—from L. *transfig'urârê*—from *trans*, over, from one to another; *figūra*, form, shape]: to change the appearance or outward form of; to transform; to glorify. **TRANSFIG'URING**, imp. **TRANSFIG'URED**, pp. *-fîg'êrd*, changed as to outward form. **TRANSFIG'URA'TION**, n. *-ă-ră'shŭn* [F.—L.]: change of form; with the definite article, the supernatural change in the personal appearance of our Lord on the Mount, described in Matt. xvii. 1-9.

TRANSFIX, v. *trăns-fîks'* [L. *transfix'us*, transfixed—from *trans*, through; *fixus*, pp. of *figo*, I fasten]: to pierce through, as with a pointed weapon. **TRANSFIX'ING**, imp. **TRANSFIXED'**, pp. *-fîkst'*. **TRANSFIX'ION**, n. *-fîk'shŭn*, the act of transfixing or state of being transfixied.

TRANSFORM, v. *trăns-fawrm'* [L. *trans*, across; *forma*, a shape]: to change the shape or appearance of; to change, as one substance into another; to change the heart or natural disposition; to be changed in form or substance. **TRANSFORM'ING**, imp.: **ADJ.** able to effect a change of form or state. **TRANSFORMED'**, pp. *-fawrm'd'*, changed; renewed. **TRANSFORMATION**, n. *trăns'fôr-mă'shŭn*, act of changing, or state of being changed; metamorphosis; a

TRANSFUSE.

change of heart or disposition. TRANSFORMATIVE, a. *trǎns-faorm'ă-tiv*, having power or a tendency to transform.

TRANSFUSE, v. *trǎns-fūz'* [F. *transfuser*, to transfuse—from L. *trans*, through; *fūsus*, pp. of *fundĕrĕ*, to pour]: to transfer by pouring; to transfer, as blood, from one living animal to another; to cause to be instilled or imbibed, as love of country. TRANSFU'SING, imp. TRANSFUSED', pp. *-fūzd'*. TRANSFU'SIBLE, a. *-fū'zī-bl*, that may be transfused. TRANSFUSION, n. *trǎns-fū'zhŭn* [F.—L.]: the introduction of the blood of one living animal into the vessels of another. Since 1824, when Dr. Blundell published *Physiological and Pathological Researches*, this has been a recognized and legitimate operation in obstetric surgery. It seems to have been known to the medical profession for the last four centuries; and there are obscure allusions in the Roman poets, which may indicate that it was practiced as early as the Augustan age:

Ut repleam vacuas juvenili sanguine venas.

Ovid.

The earliest authentic case on record is, so far as we know, that of Pope Innocent VIII., who was unsuccessfully operated on in 1492. The experiment was tried three times, and at the cost of the lives of three boys, probably from air getting into their veins, but without any effect in saving that of the pope. Denys of Montpellier, 1667, June, injected the blood of calves into the veins of a young man who had been much weakened, and had become torpid and slightly dropsical, in consequence of repeated bleedings. The first operation restored him to perfect health. In Nov. of the same year, Lower, of Oxford, publicly made a similar experiment, which seems to have been successful. Other instances of the operation are on record; but it soon fell into obscurity, doubtless from lack of success, due partly to use of the blood of calves and sheep, instead of human blood, and partly to hopeless cases of old age and decrepitude being selected for its application.

At the present day, transfusion of blood is largely restricted to cases of profuse hemorrhage in connection with labor—its benefits being probably twofold: 1, the actual restitution of blood which has been lost; 2, the supply of sufficient blood to the heart to stimulate it to contraction, and thus to enable the circulation to be carried on until fresh blood is formed. Its stimulant action is probably much the most important; and if the operation is performed before the vital energies are entirely exhausted, the effect is most marked, and indeed may be said to be almost unfailing. The operation has proved successful also in a case of coma from the fumes of carbonic oxide and carbonic acid. Blundell was in error in believing that the blood of animals of the same species was essential, Dr. Brown-Séquard having since shown that the blood of various animals can be used indiscriminately, provided only certain precautions are taken; and the important discovery has been made by Panum that defibrinated blood is in every respect as well suited for the operation as pure

TRANSGANGETIC—TRANSIENT.

blood. T. of B. has been suggested in cases of cattle-disease. As it would be impossible, without danger, to bring a healthy animal in contact with a diseased one, the value of Panum's discovery, provided the proposed remedy be successful, is obvious; for the blood of healthy oxen killed for the market could be defibrinated by whipping and straining, and would remain for many hours fit for injection, when raised to the normal temperature.

'The cases suitable for the operation,' says Dr. Playfair, 'are those in which the patient is reduced to an extreme state of exhaustion from hemorrhage during or after labor or miscarriage. The operation will not come into contemplation until other and simpler means have been tried and failed, and when the symptoms indicate that life is on the verge of extinction.' The value of the operation in suitable cases is proved by statistical evidence. One physician has recorded 36 cases, in 29 of which the patients were rescued from an apparently hopeless state; and out of 57 cases recorded by Prof. Martins, of Berlin, 43 were entirely successful, and 7 temporarily so. The blood to be injected should be taken from the arm of a strong and healthy man who can spare a sufficient quantity, since a change of persons leads to delay, which should be avoided. Usually four to six ounces of blood are sufficient, but more may be required. For details of the mode of the operation, see Dr. Playfair's *Handbook of Obstetric Operations*.

TRANSGANGETIC, a. *trǎns'gǎn-jět'ík* [L. *trans*, across, beyond; *Ganges*, the great river of Hindustan]: connected with the countries beyond the Ganges; on the opposite side of the Ganges.

TRANSGRESS, v. *trǎns-grēs'* [F. *transgresser*, to transgress—from L. *transgressus*, pp. of *transgredior*, I step over—from *trans*, across; *gradior*, I step]: to pass over or beyond a limit; to break or violate; to offend by the violation of a command; to infringe; to sin. **TRANSGRES'SING**, imp. **TRANSGRESSED'**, pp. *-grēs't'*. **TRANSGRESS'OR**, n. *-sēr*, one who transgresses; an offender. **TRANSGRES'SION**, n. *-grēs'h'ūn* [F.—L.]: the act of violating any law or rule of moral duty; a fault; a crime; a sin. **TRANSGRES'SIONAL**, a. *-āl*, involving transgression. **TRANSGRES'SIVE**, a. *-grēs'-siv*, faulty; apt to transgress; consisting in transgression. **TRANSGRESS'IVELY**, ad. *-lī*.—**SYN.** of 'transgression': crime; misdemeanor; misdeed; fault; offense; infringement; affront; violation; wrong; iniquity; wickedness; injustice; injury.

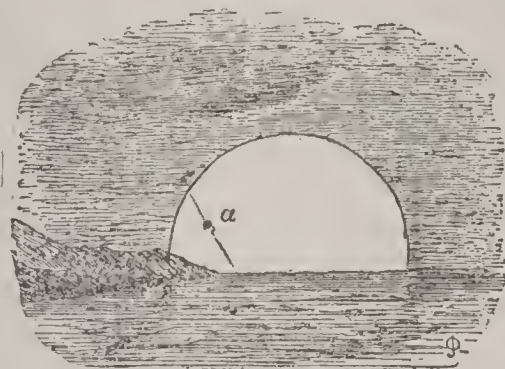
TRANSHIP, v. *trǎns-shĭp'* [L. *trans*, over, and Eng. *ship*]: to convey from one ship or conveyance to another. **TRANSHIP'MENT**, n. the act of transferring goods from one ship or conveyance to another.

TRANSIENT, a. *trǎn'shĕnt* or *-sĭ-ĕnt* [L. *transiens* or *transien'tem*, going or passing over; *transĭrĕ*, to pass over—from *trans*, across; *ĭrĕ*, to go]: passing; of short duration; soon passed; fleeting; momentary. **TRAN'SIENTLY**, ad. *-lī*. **TRAN'SIENCE**, n. *-shĕns*. **TRAN'SIENCY**, n. *-sĭ*, or **TRAN'SIENTNESS**, n. *-nĕs*, the state of being transient; shortness of continuance.

TRANSIT—TRANSIT-INSTRUMENT.

TRANSIT, n. *trǎns'it* [L. *transitus*, a passing over; *transirē*, to pass over—from *trans*, over; *irē*, to go: It. *transito*]: a passing over or through; conveyance; the passing of a heavenly body over the disk or face of another one, as the *transit* of Venus (across the face of the sun); the daily passage of a star across the meridian of a place.

TRANSITION, n. *trǎn-zish'ün* [F.—L.]: passage from one place or state to another; change; in *music*, a passing from one key to another; in *geol.*, a passage from one state or period to another: **ADJ.** noting change from one condition or state to another. **TRANSITIONAL**, a. *-ün-ät*, or **TRANSITIONARY**, a. *-ér-ī*, pertaining to or denoting transition. **TRANSITIVE**, a. *trǎns'it-iv*, having the power of passing; in *gram.*, denoting a verb whose action passes over to, or which has an effect upon, a noun or pronoun. **TRANSITIVELY**,



Transit of Mercury:

α , Mercury. The dotted line shows the path.

ad. *-lī*. **TRANSITIVENESS**, n. *-nēs*, the state or quality of being transitive. **TRANSIT-INSTRUMENT**, an astronomical instr., of which a telescope forms an essential part, and by which the exact moment of a heavenly body's transit across the meridian of the place of observation is ascertained (see below). **TRANSIT DUTY**, duty charged on goods in transit. **TRANSITION ROCKS** or **STRATA**, in *geol.*, the strata that were deposited at a period when the earth and sea were passing into a state fit for the reception of organized being; the metamorphic strata. **TRANSITORY**, a. *-ī-tér-ī*, passing without continuance; uncertain in duration; speedily vanishing; fleeting; temporary; short-lived. **TRANSITORILY**, ad. *-lī*. **TRANSITORINESS**, n. *-nēs*, a passing with a short continuance.

TRANSIT-INSTRUMENT: important astronomical instrument, consisting of a telescope fixed to a horizontal axis, so as to revolve in the plane of the meridian; and employed in the observation of the meridian transits of the heavenly bodies. The axis, the most important part of the instrument, and thus demanding the utmost care in its construction, consists of a hollow sphere or cube, to opposite sides of which are tightly fastened the bases of two cones in whose apices the pivots are screwed; the sphere or cube is pierced for the admission of the telescope, which is firmly soldered at right angles to the axis. One of the pivots is hollowed so that a stream of light can be directed

TRANSIT-INSTRUMENT.

from a lantern half-way along the interior of the axis, and through an aperture in the side, into the telescope tube, where, being received by an annular mirror, set at 45° to the axis and telescope tube, it is directed to the eye-piece, and brilliantly illumines the field of view, while the annular form of the mirror prevents any interference with the passage of rays from the object under observation to the eye. The pivots must be very carefully turned to a perfectly cylindrical form, and fitted into the instrument so that their axes are accurately in line. One extremity of the axis carries one and sometimes two small graduated circles, each supplied with index, clamping screws, and vernier; these circles are capable of indicating angular measures to within $1'$ or $2'$. The pivots rest on massive blocks of stone or other stable material which is little effected by change of temperature, stability being the great mechanical essential of the instrument. This condition satisfied, there are three adjustments necessary before a transit can be observed: the axis must be horizontal; the line of collimation must be at right angles to the axis of motion; and the latter must be placed to point accurately east and west. On the perfection of the first two of these adjustments depends whether the telescope sweeps over a great circle of the sphere, and the third is necessary to insure that this great circle shall be the meridian of the place of observation. These adjustments can never be made quite perfect, and the usual mode is to investigate the amount of error in each, and allow for it in the apparent result. To note accurately the instant of time by the astronomical clock, at which the object (e.g., a star) is seen to pass the centre of the field of view, is the essential part of a transit observation. The most effective method is to register the beats of the clock by an apparatus which, at the end of each oscillation of the pendulum, marks a dot upon a uniformly moving slip of paper. This is effected by the agency of electricity, and is one of the most valuable contributions of electrical to astronomical science. At a certain point in each oscillation of the pendulum, it becomes part of a complete galvanic circuit, the contact being immediately broken by its progression in its oscillation; and it is at these points that the galvanic agency causes the dot to be made. The instant of a transit's occurrence is similarly noted by the observer, who, by a tap on a break-circuit key fastened to the side of the transit-instrument, causes the graver to make an extra dot; and the distance of this dot from the previous seconds dot, compared with the distance between two seconds dots, gives the time accurately almost to one-hundredth of a second. Various ingenious modes of registering have been proposed, all founded on the above principles. It is from the times of transit of the several heavenly bodies thus observed, that their right ascensions are determined.

The transit-instrument was invented by Römer about 1690. One was erected in Greenwich Observatory by Halley 1721, but it was little used till 1742.—See CIRCLE, MURAL.

TRANSKEI TERRITORY—TRANSLUCENT.

TRANSKEI TERRITORY, *trāns-kē'*: dependency of the Cape Colony, between the Great Kei river (which is the boundary of Brit. Kaffraria) and the borders of Natal. Covering most of what was known formerly as Kaffraria (q.v.) proper, the T. T. is now divided into Griqualand East, Tembuland, and Transkei in the stricter sense—the latter comprising Fingoland, the Idutwya Reserve, and Gealekaland. The last independent portion, Pondoland, was annexed 1884.—See CAPE OF GOOD HOPE.

TRANSLATE, v. *trāns-lāt'* [OF. *translater*—from L. *translātus*, carried or brought over, transferred—from *trans*, over; *lātus*, carried; It. *translatore*]: to carry or remove from one place to another; to remove from one see or pastoral charge to another, as a bishop or clergyman; to convey; to remove or convey to heaven without death (e.g., Enoch and Elijah); to change into another form; to transform; to render into another language; to interpret. TRANSLA'TING, imp. TRANSLA'TED, pp. TRANSLA'TOR, n. -*tér*, one who expresses the sense of words in one language by those of another; an instrument for converting one form of energy into another; a sensitive receiving-instrument used by telegraphers for retransmitting a message or for translation; a 'relay.' TRANSLA'TABLE, a. -*tū-bl*, that may be expressed in the words of another language. TRANSLA'TION, n. -*shūn* [F.—L.]: change or removal from one place to another, as a bishop; the removal of a person to heaven without tasting death; the act of expressing the words of one language by the words of another; interpretation; a version. TRANSLA'TIVE, a. -*tiv*, taken from others. TRANSLA'TORY, a. -*tér-ī*, transferring; serving to convey or change. TRANSLA'TRESS, n. -*trēs*, a woman who translates.

TRANSLEITHANIA, *trāns-li-tá'nē-a*: name of the part of Austro-Hungary e. of the Leitha river; comprising Hungary proper, Transylvania, Croatia, and Slavonia.—See CISLEITHANIA.

TRANSLITERATE, v. *trāns-lit'ér-āt* [L. *trans*, across, beyond; *litēra*, a letter]: to express the words of one language, such as Arabic, Sanskrit, or Chinese, by the letters or characters of another, as to *transliterate* Japanese words by spelling with English letters. TRANSLIT'ERATING, imp. TRANSLITERATED, pp. TRANSLIT'ERA'TION, n. -*ā'shūn*, the act of rendering the characters of one language by the letters of another.

TRANSLUCENT, a. *trāns-lō'sēnt* [L. *translūcens* or *translūcen'tem*, shining through; *translucēre*, to shine through—from *trans*, through; *lucēre*, to shine—from *lux* or *lūcem*, light]: transmitting rays of light, but not in sufficient quantity to permit objects to be seen through it, as a *translucent* mineral; semi-transparent; in *poetry*, pellucid; clear; transparent. TRANSLU'CENTLY, ad. -*lī*. TRANSLU'CENCE, n. -*sēns*, or TRANSLU'CENCY, n. -*sēn-sī*, that property of certain minerals and other substances which permits light to pass through them, but not in sufficient quantity to show distinctly the forms and colors of objects placed on their other side. TRANSLU'CID, a. -*sīd*, semi-transparent; clear.

TRANSMARINE—TRANSMIGRATION OF SOULS

TRANSMARINE, a. *trǎns'mǎ-rĕn'* [L. *trans*, beyond, and *mārinus*, of or belonging to the sea—from *mǎrĕ*, the sea]: beyond the sea.

TRANSMIGRATE, v. *trǎns'mǎ-grāt* [L. *transmigrātus*, removed across—from *trans*, beyond; *migrātus*, pp. of *migrāre*, to remove]: to pass over or into another country; to emigrate; to pass from one body into another, and become incarnate in it, as the soul. TRANS'MIGRATING, imp. TRANS'MIGRATED, pp. TRANS'MIGRATOR, n. *-grā-tēr*, one who transmigrates. TRANS'MIGRA'TION, n. *-grā'shūn*, the passing of persons from one country to another for the purpose of residence; the passing of a thing into another state; the passage of the soul into another body after death; metempsychosis (see TRANSMIGRATION OF SOULS). TRANSMIGRATORY, a. *trǎns-mǎ'grā-tēr-ĭ*, passing from one place or state to another.

TRANSMIGRA'TION OF SOULS: supposed passing of the souls of men at death into the bodies of other persons, or into the bodies of animals; metempsychosis. The belief in such a transition is one of the most important phases in the religions of mankind. It was common to the most uncivilized and the most civilized nations; it was the object of fantastical superstition and of philosophical speculation; and it is the property of both ancient and modern times. Its basis being the assumption that the human soul does not perish with the body, it could belong to those nations only which had already conceived an idea of the immortality of the soul; but in proportion as such an idea is crude or developed, as it is founded merely on a vague fear of death and a craving for material life or on ethical grounds and a supposed causal connection between this and a future life, the doctrine of T. assumes various forms, and influences more or less the actions of men.

The lowest forms of this belief are probably those among several tribes of Africa and America, which hold that the soul, immediately after death, must look out for a new owner, and, if need be, enter even the body of an animal. Several negro tribes therefore bury their dead near the houses of their relatives, in order to enable the souls of the former to occupy the newly-born children of the latter, and the princely souls to re-enter the princely family; and until the soul is thus accommodated, milk, brandy, and food are placed on the grave of the deceased, to keep it, as it were, from starving; and sometimes holes are dug in the grave, to facilitate the soul's egress from it. In N. America, some tribes slaughter their captives to feed with their blood such souls in suspense. The negro widows of Matamba are especially afraid of the souls of their husbands, for at the death of these they immediately throw themselves into the water, to drown their husbands' souls, which otherwise, as they suppose, would cling to them. The natives of Madagascar seem to have invented a kind of artificial T.; for in the hut where a man is about to die they make a hole in the roof, in order to catch the outgoing soul, and to breathe it into the body of another man on the point of death. From these and instances of a sim-

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ilar kind, it appears that nations which entertain such a belief in T. assume that the souls of the deceased must continue to dwell on earth, and that one human being may be possessed of several souls. With them the final destination of the soul is a matter of comparative indifference; its transition from one body into another a mere matter of chance, devoid—apparently, at least—of any ethical principle, and therefore without any moral effect on the living, except, perhaps, that of a stolid indifference to death, as often manifested in the plantations of the W. Indies, where negroes hang themselves in the belief that their souls will migrate into other countries, and there enjoy a happier life.

Another, more poetical and more ideal, form of this belief in T. occurs in Germanic mythology, and is still entertained in parts of Germany and England. According to it, the soul, before entering its divine abode, assumes certain forms, or animates certain objects, in which it lives for a short period. Thus, it is supposed to enter some flower or tree, a rose, a vine, a plantain, a pine-tree; or to animate a butterfly, a pigeon, and sometimes also—if a person dies while enchanted or sleeping—a serpent, a weasel, or a mouse. The most popular form of these supposed transmigrations is that of a pigeon, which bird, therefore, is often represented on the oldest tombstones. When the robber Madej, for instance, under an apple-tree confessed his crimes, one apple after another, transformed into a white pigeon, flew into the air. They were the souls of the persons murdered by him; only one apple remained, because he had not yet confessed the murder of his father; but when he did so, the last apple also—the soul of his father—assuming the shape of a gray pigeon, flew after the rest.

Different from this kind of belief in T. is that based on ethical grounds. It proceeds from the theory that human souls, being of divine essence, are originally pure, but during their earthly career lose their purity; being destined, however, to regain their original quality, they are reborn again and again, until they have become free from fault, and thus worthy of re-entering the place of their origin. A belief of this nature was entertained by the old Mexicans, probably by the Druids also. It is met in more developed form with the old Egyptians; but its real importance it obtained as a tenet of the religion and philosophy of the Brahmanical Hindus and the Buddhists, whence it passed into the doctrine of several philosophers of ancient Greece, and into that of some Jewish and Christian sects. The ethical and philosophical value of such a belief is necessarily relative. It will depend on what a religion or philosophy may call right or wrong, virtue or sin; it will depend likewise on the notions which religion or philosophy may entertain on the origin of the human soul, on the cause of its first birth, and on its ultimate destination, whether this destination is the merging of the soul into the essence of its Creator, or a personal immortality; also the mode in which such a personal immortality

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is conceived will necessarily influence the mode in which T. is supposed to take place. Where the ideas on these questions have remained crude, the idea of T., too, has little ethical or philosophical worth. The old Mexicans imagine that the gods *Ometeuctli* and *Omecihuall* create in heaven the soul of a child destined to be born, and that by its acts on earth it will either ascend to the abode of the highest felicity, or remain in an intermediate heaven, or fall to hell. The highest goal, in the house of the sun with the god *Huitzilopotchli*, is full of pleasure and joy, and is attained only by the souls of fallen warriors, or those who died in captivity, and women dying in childbirth. The second or intermediate heaven, cool and pleasant, but of moderate enjoyments, falls to the lot of men who are not wicked. The wicked, however, go to the abode of darkness; and in darkness consists their punishment. But those entitled to the second heaven may, if they like, return to earth to qualify themselves for the highest heaven, if such is their aspiration. Of the Druids it is told by classical writers that they believed in the immortality of the soul and in its migration after a certain period subsequent to death. Little is known of the manner in which they imagined such migrations to take place; but, to judge from their religious system, there can be no doubt that they regarded transmigrations as a means of purifying the soul and preparing it for eternal life.

According to the doctrine of the old Egyptians, the human race originated after the pure gods and spirits had left the earth—departing because the demons who inhabited the earth had revolted against them, and therefore tainted it with guilt. But, to enable the demons to purge themselves of their guilt, the gods created earthly bodies, which the demons were sentenced to animate, so that by expiations they might regain their state of original purity. And these earthly bodies, united to the demons, are the human race; their souls were therefore created at the same time as those of the gods; and human life—the connection of body and soul—is intended merely as a means of purifying the soul which had rebelled against its divine nature. All the precepts regulating the course of life are laid down by the Egyptians for this end; and the judgment passed after death, in the palace of Osiris, decides whether it has been attained or not. If it has not, the soul must return to the earth again, to renew its expiations; and according to the nature and measure of the guilt which it had contracted during its previous career, it must form a new union with a human body, or with the body of an animal, or even a plant. But if the soul is declared pure by the judge of the dead, it gradually ascends through the various regions of heaven, to the highest abodes of the gods and pure spirits, presided over by Phtah and Neith.

At the time when in *India* the dogma of T. became an integral part of the Brahmanic religion, the Hindus believed that human souls emanated from a supreme Being, which, in a state of bewilderment or forgetfulness, allowed them to become separate existences and to be born on

earth. The soul, thus severed from the real source of its life, is bound to return to it, or to become merged again into that divine substance with which it was originally one; but as its nature becomes contaminated with sin through its earthly career, it must, so long as it remains in this world, endeavor to free itself from all guilt, and thus to become fit for its ultimate destiny. Religion teaches that this is done by the observance of religious rites, and a life in conformity with the precepts of the sacred books; philosophy, that the soul will be reunited with Brahma if it *understands* the true nature of the divine essence whence it comes. So long, therefore, as the soul has not attained this condition of purity, it must be born again, after the dissolution of the body to which it was allied; and the degree of its impurity at one of these various deaths determines the existence which it will assume in a subsequent life. See INDIA—*Religion and Philosophy*: UPANISHAD.

Since there can be no proof of the soul's migrations, the detail in which these are described in the religious works of the Hindus is merely fantastical, and interesting only so far as it affords a kind of standard by which, at various epochs and by different writers, the moral merit or demerit of human actions was measured in India. Thus, Manu (in the 12th book of his Code of Laws) teaches: 'A Brâhman'a who drinks spirituous liquor will migrate into the bodies of a worm, an insect, a grasshopper, a fly feeding on ordure, or some mischievous animal. A twice-born who steals (the gold of a Brâhman'a) will pass a thousand times into the bodies of spiders, snakes, and chameleons, of aquatic monsters, or of murderous blood-thirsty demons. He who violates the bed of his guru (spiritual teacher) will a hundred times migrate into the forms of grasses, of shrubs, and of creeping plants, of carnivorous animals and beasts with long teeth, or of cruel brutes. Those who inflict injury (on sentient beings) become flesh-eaters; and those who eat forbidden things, worms. . . . If a man, through covetousness, has stolen . . . grain, he becomes a rat; . . . if honey, a gadfly; if milk, a crow; if juice (of the sugar-cane or the like), a dog; if clarified butter, an ichneumon; if flesh, a vulture; . . . if oil, a cockroach;' etc. A more general doctrine of the migration of souls is based by Hindu philosophers on the assumption of the three cosmic qualities—viz., *sattwa*, i.e., purity or goodness; *rajas*, i.e., troubledness or passion; and *tamas*, i.e., darkness or sin—with which the human soul may become endued. Thus, Manu teaches that 'souls endued with the quality of *sattwa* attain the condition of deities; those having the quality of *rajas*, the condition of men; and those having the quality of *tamas*, the condition of beasts.' Each of these conditions, he continues, is—according to the acts or knowledge of the soul—three-fold: the lowest, the middle, and the highest. 'The lowest embodiment of the quality *tamas* is inanimate objects, worms, insects, fish, serpents, tortoises, tame and wild beasts.' From this, the lowest of the nine conditions into

which the soul migrates, Manu specifies minutely the grades higher and higher, until he ends the catalogue with the highest: 'The highest condition to which the quality of *sattwa* leads is that of the god Brahmâ, that of a creator of the world (as *Marîchi*, or another patriarch of the same rank), that of the genius of *Dharma* (virtue or right), of *Mahat*, or the intellectual principle of creation, and of *Prakr'iti*, or matter.' See SÂNKHYA. Other Hindu teachers give different details of the migrations; but since all orthodox Hindu writers agree in principle with Manu, the quotations above given suffice to illustrate the imaginary positiveness with which the doctrine of T. was propounded, as well as the fact that this doctrine rested, in India, on ethical grounds.

It has been noted above that the belief in the soul's life after the death of the body must precede the doctrine of transmigration. This belief has been supposed traceable in some hymns of the *R'igveda* (see VEDA); but aside from the fallacy in speaking of this Veda as a contemporaneous whole, the only passage adduced in proof of this important discovery fails on examination to give evidence for any conclusion whatever on the subject.

The *Buddhistic* belief in transmigration is derived from that of the Brahmanic Hindus; it agrees with the Brahmanic in principle, though differing in the imaginary detail in which it was worked out.

Like the Brahmanic Hindus, the Buddhists believe that all souls have existed from the beginning; like them, they believe in the unreality and sinfulness of the world, in the necessity of the soul's freeing itself from the bondage of this world, and in the causal connection between the actions of man in this and his condition in a subsequent life. Like the Brahmanic Hindus, they hold, therefore, that sin is the cause of T., and that by a total expiation of sin the soul ceases to be reborn and attains its final resting-place. But since this resting-place is to the Buddhists Nirvâna (q.v.), or Nonentity, whereas to Brahmanism it is Brahman, or the principle of Entity; since Buddhists reject the institution of caste, which is the social foundation of Brahmanic life; since they do not acknowledge the authority of the Vedas, and the codes based on them—the moral standard of a Buddhist must differ from that of a Brahmanic Hindu; and his ideas of reward and punishment, as reflected by his ideas of T., must likewise differ. The *detail* of the Buddhistic doctrine of T. is as fanciful as that of the Brahmanic doctrine (see BUDDHISM: LAMA). One great difference, however, separates the notions of one class of Buddhists from those of the rest, as well as from those of the Brahmanic Hindus. According to the latter, and the great mass of Buddhists, it is always the same soul which ever from its first birth reappears in its subsequent births, until it is finally liberated from T. But in the belief of the southern Buddhists, the succession of existences of a being is a succession also of souls; and each such soul, though the result of its predecessor, is not identical with it. According to this view, the body dies, and with

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it the soul too is 'extinguished,' leaving behind only the good and bad acts which it has performed during its life. The result of these acts now becomes the seed of a new life, and the soul of this new life is therefore the necessary product of the soul of the former life. Thus all the succeeding souls have to labor at the solution of the same problem, which began when their first ancestor entered this world; but no succeeding birth is animated by the same soul. This dogma is illustrated in their works by various similes—e.g., one lamp is kindled at another; the light of the former is not identical with that of the latter; nevertheless, without the former, the other light could not have originated. Or, a tree produces fruit; from the fruit, another tree arises, and so on; the last tree is therefore not the same tree as the first, though the fruit is the necessary cause of the last.

In Greece, the doctrine of Transmigration—or, as it was there called, *metempsychosis*—did not become the belief of the people, but was confined to the teaching of the mysteries and the tenets of philosophers, who probably derived it, directly or indirectly, from Egypt or India. According to some, Thales (q.v.) was the first Greek philosopher who propounded it; according to others, Pherecydes (q.v.), teacher of Pythagoras (q.v.); but it obtained importance in Greek philosophy first through the system of Pythagoras, who seems to have gained his knowledge of it from Egyptian sources. After him, Plato (q.v.) assigned T. a prominent place in his philosophy; and he probably was indebted to Hindu writers for his views on metempsychosis, as explained in his dialogues, especially *Phædros*. Plato's doctrine was refuted by Aristotle, but revived, in modified form, by the Neo-Platonists.

Since a belief that the consequences of the acts of man must follow their inevitable course, and can neither be averted nor stopped by the interposition of a divine power, is incompatible with a belief in the forgiving and purifying grace of God, the doctrine of T. could never gain firm ground in the religion of the Jews or of the Christians. However, in both these religions it found occasional adherents in ancient and modern times. Among the Jews, the doctrine of T.—the *Gilgul Neshamoth*—was taught in the mystical system of the *Kabbala*, which pretends to divulge the secrets of creation and of the nature of the divine and human soul, and whose principle is the same as that of Brahmanism. The souls, like all other existences of this world, it teaches, must re-enter the absolute substance whence they have emerged. But to accomplish this end, they must develop all the perfections whose germ is planted in them; and if they have not fulfilled this condition during one life, they must begin another, a third, and so onward, until they have acquired the condition which fits them for their reunion with the divine. This doctrine was shared in by rabbis of highest renown, and was held by some in connection with wildly fantastic theories, such as that souls migrate into the bodies of other men—Adam's soul migrating into David, etc. Modern Kabbalists—e.g., Isaac Lo

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ria—have imagined that divine grace sometimes assists a soul in its career of expiation by allowing it to occupy the same body jointly with another soul, when both are to supplement each other with aid, like the blind and the lame walking in a pair. Sometimes only one of these two souls requires a supplement of virtue, which it obtains from the other soul better provided—the better-provided soul becoming then, as it were, the mother of the other soul, bearing it under her heart like a pregnant woman.

Among the early Christians, according to St. Jerome, the doctrine of T. was taught as a traditional and esoteric one, communicated to only a selected few; and Origen, like the Kabbalists, considers it as the only means of explaining some biblical traditions—e.g., that of the struggle of Jacob and Esau before their birth; and as explaining some events which (as he thinks) would throw discredit on divine justice unless they were justified by good or bad acts done in a former life. Of Christian sects, the Manicheans (q.v.) especially adhered to this belief; but the church always rejected it as a heresy.

In modern times, at least one great philosopher has advanced views of the progress of mankind involving the principle of T.—the celebrated German critic G. E. Lessing, who endeavored to establish it on metaphysical grounds. His arguments are briefly these: The soul is a simple being, capable of infinite conceptions. But being a finite being, it is not capable of such infinite conceptions at the same time; it must obtain them only gradually in an infinite succession of time. If, however, it obtain them gradually, there must be an order in which, and a degree to which, these conceptions are acquired. This order and this measure are the bodily senses. At present, the soul has of such senses five; but neither is there any ground to assume that it began with having five senses, nor is there ground to assume that it will stop with five. For, since nature never takes a leap, the soul must have gone through all the lower stages before it arrived at that which it occupies now; . . . and since nature contains many substances and powers not accessible to those senses with which it is now endued, it must be assumed that there will be future stages at which the soul will have as many senses as correspond with the powers of nature. And ‘this my system’ he writes in his little essay, *Dass mehr als fünf Sinne für den Menschen sein können*—in a fragmentary note discovered after his death—‘this my system is certainly the oldest of all philosophical systems; for it is in reality no other than the system of the pre-existence of the soul and metempsychosis.’

TRANSMISSIBLE—TRANSOM.

TRANSMISSIBLE, a. *trǎns-mǐs'sǐ-bl* [F. *transmissible*, transmissible—from L. *trans*, beyond; *missus*, pp. of *mīt-tērē*, to send]: that may be transmitted or passed from one to another, or through a body. **TRANSMIS'SIBIL'ITY**, n. *-bǐl'ǐ-tǐ*, the quality of being transmissible. **TRANSMIS'SION**, n. *-mǐsh'ūn* [F. *transmission*—from L. *transmissiō* or *transmissiōnem*, a sending across]: the act of sending, or state of being sent, from one to another; passage through. **TRANSMIS'SIVE**, a. *-mǐs'siv*, transmitted; communicated from one to another.

TRANSMIT, v. *trǎns-mīt'* [L. *transmīt-tērē*, to send across; to transmit—from *trans*, over; *mitto*, I send: F. *transmettre*]: to send from one person or place to another; pass along; hand down; to suffer to pass through. **TRANSMIT'TING**, imp. **TRANSMIT'TED**, pp. sent from one to another. **TRANSMIT'TER**, n. *-tēr*, one who or that which transmits. **TRANSMIT'TIBLE**, a. *-tǐ-bl*, that may be transmitted or sent from one to another. **TRANSMIT'TANCE**, n. *-tǎns*, or **TRANSMIT'TAL**, n. *-tǎl*, transmission.

TRANSMOGRIFY, v. *trǎns-mög'rǐ-fǐ* [familiar slang: L. *trans*, across]: *familiarly*, to change into a different shape; to change into some other person or thing as if by magic. **TRANSMOG'RIFYING**, imp. **TRANSMOG'RIFIED**, pp. *-fǐd*. **TRANSMOG'RIFICA'TION**, n. *-fǐ-kǎ'shǔn*, the act of transmogrifying or state of being transmogrified.

TRANSMUTE, v. *trǎns-mūt'* [L. *transmutārē*, to transmute—from *trans*, across; *mūto*, I change: F. *transmuer*]: to change from one nature, form, or substance into another. **TRANSMU'TING**, imp.: N. the act of transforming into another nature or substance. **TRANSMU'TED**, pp. **TRANSMU'TABLE**, a. *-mū'tǎ-bl*, that may be changed into another nature or substance. **TRANSMU'TABLY**, ad. *-tǎ-blǐ*. **TRANSMU'TABIL'ITY**, n. *-bǐl'ǐ-tǐ*, or **TRANSMU'TABLENESS**, n. *-bl-nēs*, quality of being transmutable. **TRANSMUTATION**, n. *trǎns'mū-tǎ'shǔn* [F.—L.]: change into another substance, form, or nature; in *alchemy*, the transformation of the baser into the more precious metals, in *geol.*, a change from one place to another, or from one thing into another. **TRANSMU'TER**, n. *-tēr*, one who or that which transmutes. **TRANSMU'TUAL**, a. *-tū-ǎl*, reciprocal.

TRANSNORMAL, a. *trǎns-nōr'mǎl* [L. *trans*, across, beyond; Eng. *normal*]: expressing something in excess of the normal or usual state, or beyond it; not normal in character.

TRANSOM, n. *trǎn'sōm* [L. *trans*, across; F. *sommier*, a sumpter-horse, the piece of timber called a summer (see **SUMPTER**: **SUMMER** 2): also derived by some from L. *transenna*, a rope, a noose, or from L. *transtrum*, a cross-beam, transom]: in a *ship*, a beam or timber fixed across the stern-post to strengthen the after-part and give it form: in *arch.*, a horizontal mullion or cross-bar in a window; a lintel over a door, separating it from the fan-light above: in *artillery*, one of the bars which serve to hold together the two sides or 'cheeks' of a gun-carriage: in *surv.*, the vane of a cross-staff; a cross-bar of any kind.

TRANSPADANE—TRANSPLANTING.

TRANSPADANE, a. *trăns-păd'ăn* [L. *transpadanus*—from *trans*, across, beyond; *Padus*, the river Po—from *Padanus*, of or belonging to the Po]: beyond the Po, as viewed from Rome. **TRANSPADANE REPUBLIC**: see **CIS-ALPINE**.

TRANSPARENT, a. *trăns-păr'ent* [F. *transparent*—from L. *trans*, through; *parens* or *paren'tem*, appearing; *parērē*, to appear: Sp. *transparente*]: that may be seen through; clear; limpid; opposite of *opaque*. **TRANSPAR'ENTLY**, ad. *-lī*, so clearly as to be seen through. **TRANSPAR'ENTNESS**, n. *-nēs*, quality of being transparent. **TRANSPARENCE**, n. *trăns-păr'ens*, or **TRANSPAR'ENCY**, n. *-ēn-sī*, that property of bodies which permits light to pass through them so freely that the forms, hues, and distances of objects can be distinctly seen through them; a picture painted on a semi-transparent material, and which may be seen by light passing through it; a positive photographic picture on glass, intended to be viewed by transmitted light; a slide for a magic-lantern or stereopticon.—**SYN.** of 'transparent': clear; pellucid; lucid; bright; limpid; diaphanous.

TRANSPICUOUS, a. *trăn'spīk-ū-ūs* [L. *transpicīō*, I look or see through—from *trans*, across; *specīō*, I see]: transparent; that can be seen through.

TRANSPIERCE, v. *trăns-pērs'* [L. *trans*, through; Eng. *pierce*]: to pass through; to penetrate; to perineate.

TRANSPIRE, v. *trăn-spīr'* [F. *transpirer*, to transpire—from L. *trans*, through; *spīrārē*, to breathe]: to emit through the pores of the skin; to be emitted; to send off in vapor; to pass off in insensible vapor; to escape from secrecy; to become public. **TRANSPIRING**, imp. **TRANSPIRED'**, pp. *-spīrd'*. **TRANSPI'RABLE**, a. *-spī'ră-bl*, that may be emitted through pores. **TRANSPIRATION**, n. *trăn'spī-ră'shūn* [F.—L.]: the process of passing off through the pores of the skin in the form of vapor.

TRANSPLANT, v. *trăns-plănt'* [F. *transplanter*, to transplant—from L. *trans*, across; *plantārē*, to plant (see **PLANT**)]: to remove and plant in another place; to remove and settle in residence in another place; to remove. **TRANSPLANTING**, imp.: N. the act of removing, as a tree, from one situation to another. **TRANSPLANT'ED**, pp. **TRANSPLANT'ER**, n. *-ēr*, one who transplants; a machine used in the transplanting of trees. **TRANS'PLANTA'TION**, n. *-tă'shūn* [F.—L.]: the act of removing into another soil; conveyance, as of a disease.

TRANSPLANTING: removal of a growing plant from one situation to another—much practiced with many kinds of cultivated plants, which are started in a hotbed, garden, or nursery, and *planted out*. Many flowers and culinary plants are generally treated in this way, as well as shrubs, and fruit and ornamental trees. It is desirable to have a ball of earth attached to the roots of trees or shrubs, though this is often neglected. It is desirable also to shade and water small plants for a few days after transplanting. Young plants are easily transplanted, as their roots, not having spread far, are raised from the ground without

TRANSPLENDENT.

much injury, and this is the thing of first importance in the operation. At an advanced age, T. becomes difficult. No plant can be transplanted with safety when in flower or fruit; even if the plant lives, the flowers or fruit will almost certainly perish. Trees and shrubs ought, if possible, to be transplanted in late autumn or early spring, when vegetation is comparatively inactive.

The soil in which plants or trees are to be placed should be in a fertile condition, and by plowing and harrowing be well prepared for their reception. Small plants, as celery, tomato, and egg-plant, which are usually transplanted, could be grown as well in open land if they were given as much room as is assigned to those which are transplanted, and if they could be started sufficiently early in the season. But with many kinds of plants the latter requisite cannot be secured, and it is necessary to start the seed in hot-beds or cold frames in order to have the plants of sufficient age to produce fruit, or reach maturity, at the time desired. Cloudy days are desirable for T., but if it is necessary to do the work in fair weather it should be done toward night. Roots should be dipped in water and the plants should be set, in freshly stirred soil, soon after they are taken from the ground. The soil must be pressed firmly around the roots—a rule imperative with shrubs and trees as well as with plants. In T. trees it is of great importance to secure good roots, to trim off carefully the ends of all that are broken or mangled, and to cut back the tops in the same proportion as the roots have been curtailed. If not in a good state of fertility the ground should be enriched by well-rotted manure or commercial fertilizer. The holes in which the trees are to be set should be of sufficient size to allow the roots to be spread in their natural condition, and deep enough to have the trunks stand a very little lower than they did in the Nursery (q.v.). The fine surface-soil is to be filled in carefully among the roots, and trodden down as the work proceeds. Tall trees should be supported by tying them to stakes; but it is in many respects very much better to set small rather than large trees. Mulching a circle somewhat larger than that occupied by the roots of the tree is of great advantage, particularly in dry soils. The T. of trees from the forest, or open land, is much more difficult than that of trees from the nursery, as the latter have already been removed from the seed-beds in which they were started, and thus have been forced to keep their roots more compact than those of trees which have grown in a single locality. In taking up such trees care should be given to secure good roots and to leave as much earth on them as possible. If the trees have reached much size, the use of a truck with a hoisting apparatus, made specially for the purpose, will greatly facilitate their removal.

TRANSPLENDENT, *a.* *trăn-splěn'děnt* [*L. trans*, across, beyond; *splendens* or *splenden'tem*, shining (see **SPLENDOR**)]: resplendent in the highest degree. **TRANSPLEN'DENCY**, *n.* *-děn-sĩ*, exceeding splendor.

TRANSPORT.

TRANSPORT, *v.* *trāns pōrt'* [*F. transporter*—from *L. transportāre*, to convey over—from *trans*, across; *porto*, I carry: *It. trasportare*]: to carry over or across; to remove from one place to another; to send or carry into banishment, as a criminal; to hurry or carry away by passion or emotion; to ravish with pleasure or ecstasy. **TRANSPORT**, *n.* *trāns'pōrt*, conveyance for baggage and stores; the men, horses, and wagons so employed; a ship employed by government in conveying troops, munitions of war, stores, etc.; rapture; ecstasy; a violent manifestation of anger or rage; an old name in Great Britain and her colonies for a convict sentenced to be carried beyond seas. **TRANSPORT'ING**, *imp.*: **ADJ.** bearing away the soul with pleasure; ravishing with delight. **TRANSPORT'INGLY**, *ad.* -*ly*. **TRANSPORT'ED**, *pp.* conveyed; ravished with delight. **TRANSPORT'ABLE**, *a.* -*ā-bl* [*F.—L.*]: that may be removed or transported; incurring transportation. **TRANSPORT'ABILITY**, *n.* -*ā-bil'ī-tī*, state of being transportable. **TRANSPORTATION**, *n.* *trāns'pōr-tā'shūn* [*F.—L.*]: the act of carrying or conveying from one place to another; conveyance; carriage; banishment for crime. **TRANSPORT'AL**, *n.* -*āl*, the act of removing from one place to another. **TRANSPORT'EDLY**, *ad.* -*ly*. **TRANSPORT'ER**, *n.* -*ēr*, one who transports. **TRANSPORT'ANCE**, *n.* -*āns*, in *OE.*, conveyance; carriage; transportation.

TRANSPORT, MILITARY AND NAVAL: conveyance for troops, horses, wagons, equipment, ammunition, stores, etc.—including the animals and men, also the ships, employed in conveyance. An army is helpless without a powerful system of transport. To cross a sea, a large fleet is requisite with accommodations for horses, artillery, etc. Equally important is the T. to the army moving by land. On entering battle, infantry and cavalry usually carry three days' rations with them, and perhaps 60 rounds of ammunition. The moment these are exhausted, they become dependent on the T. department for their replenishment. The first reserves are immediately in rear. To bring up supplies from these, and to keep these reserves themselves supplied, is the duty of the commissariat dept. as regards food, and of the field-train as regards ammunition. Between the grand depot and the base, the operation is generally intrusted to the wagons and beasts of the country, driven by natives, of course under proper military control. The amount of T. requisite for a large army seems almost incredible: the lowest computation (if animal T. is used) must put one animal to four fighting-men. In addition to the T. of food and ammunition, the wounded and sick have to be carried, both from the field to the hospitals and during a march.—In the U. S. army, the T. is committed to the Quartermaster's Department (q.v.); similarly in the Brit. army; in the French army, it is under the *Intendant*, who is over all the administrative departments.

TRANSPORTATION—TRANSPOSE.

TRANSPORTATION, PENAL: removal of criminals from one territory to another. In Great Britain T. means usually removal beyond seas, as a punishment. The practice was known to the Romans; and T. to Sicily is referred to in Cicero's charges against Verres. The legal T. of criminals began in Great Britain early in the 17th c., when convicts were sent to the Plantations in America. This practice continued, under modifications, until it was ended by the American revolution. When this method of rid-dance of convicts ceased, there was great alarm lest the British islands would be overrun with crime; and it was hailed as a deliverance when the govt. established a penal colony in Australia. The first convicts were conveyed thither 1787, which was the beginning of the famous colony of Sydney, or Botany Bay (q.v.). The system was at its height 1820-30; but though thousands were annually removed, crime did not decrease. It was forgotten that the predatory and fraudulent offenses are a sort of busi-ness as well as crime; and that the place of criminals re-moved is immediately supplied. When the criminals were sent to the antipodes, it was mistakenly supposed that they took the crime of the country with them, and that there was so much less need for precautionary measures at home. Now, for many years, the greater proportion of the class of criminals formerly transported have been retained in Brit. prisons, and liberated at the end of their punishment. This practice has been accompanied with two classes of precautionary measures—an improved police, and the reformation of juvenile delinquents; and the result has been that crime is diminished to the extent of between a third and a half. On the criminals themselves the effect of T. was proved to be hopelessly demoralizing; and in 1840 T. to New South Wales came to an end as a result of a report on the subject by a committee of the house of commons; and by a succession of statutes, sentences to penal servitude (q.v.) were substituted for sentences to T. In 1868 T. to W. Australia also wholly ceased, to the great benefit of that whole continent. Russia sends political prisoners to the desolate region of Siberia; and the practice began in France just as it was being abandoned by Great Britain.—See CONVICT: TICKET OF LEAVE: PRISONS—PRISON DISCIPLINE.

TRANSPOSE, v. *trǎns-pōz'* [F. *transposer*—from L. *trans*; F. *poser*, to place: L. *transpositus*, placed across—from *trans*, across; *positus*, pp. of *ponĕrĕ*, to place]: to change the place or order of by putting one in the place of the other; in *alg.*, to change a term from one side of an equa-tion to the other by changing the sign; in *gram.*, to change the natural order of words or letters; in *music*, to change the key; to write, sing, or play a piece of music in a dif-ferent key; in *OE.*, to put out of the place; to remove. **TRANSPO'SING**, imp. **TRANSPosed'**, pp. *-pōzd'*. **TRANSPo'SER**, n. *-zĕr*, one who transposes. **TRANSPo'SAL**, n. *-zāl*, a change of place or order. **TRANSPo'SITION**, n. *trǎns'pō-zĭsh'ŭn* [F.—L.]: the changing the places of words or things; the state of being transposed or put out of one

TRANS-SHAPE—TRANSUBSTANTIATION.

place into another; in *gram.*, a change in the natural order of words or letters; in *music*, a change in the key, either in transcription or performance. TRANS'POSITIONAL, a. -*ün-al*, pertaining to or embracing transposition. TRANS-POSITIVE, a. *träns-pöz'ĩ-tiv*, made by or consisting in transposition. TRANSPOS'ITIVELY, ad. -*lĩ*.

TRANS-SHAPE, v. *träns-shāp'* [L. *trans*, and Eng. *shape*]: to transform; to change into another shape.

TRANSSHIP: another spelling of TRANSHIP (q.v.).

TRANSUBSTANTIATE, v. *trä'n'süb-stän'shĩ-ät* [F. *transsubstantier*, to transubstantiate—from L. *trans*, across or over; *substan'tĩa*, substance]: to change from one substance into another substance. TRAN'SUBSTANTIA'TION, n. -*ä'shün*, a changing into another substance; in the *Rom. Cath. Chh.*, the change—believed by Rom. Catholics to be miraculous—in the consecration of the substance of the bread and wine in the Eucharist, into the body and blood of Christ, only the appearance of the bread and wine remaining. TRAN'-SUBSTAN'TIATOR, n. -*shĩ-ä-tér*, one who believes in transubstantiation. TRAN'SUBSTAN'TIAL, a. -*shāl*, having passed from its original nature, essence, or substance; relating to transubstantiation.

TRANSUBSTANTIA'TION: literally, 'change of substance,' term used by the scholastic writers of the Rom. Cath. Church to designate the change believed to take place in the Eucharistic elements of bread and wine, in virtue of the consecration. Under the term REAL PRESENCE (q.v.), often loosely comprehended under the larger name of T., the Rom. Cath. doctrine as to the presence of the body and blood of Christ in the Eucharist, after consecration, is set forth. There remains, however, a further inquiry concerning the elements of bread and wine which had existed in their natural condition before the consecration. For Sacramentarians (q.v.), this question is easily resolved. But those Protestants who hold in common with Rom. Catholics the reality of Christ's presence, differ from them as to the co-presence of the substance of bread and wine after consecration. Some Anglican divines, who hold the real presence of Christ's body and blood, appear to content themselves with remaining silent as to the mode of the presence. Dr. Pusey goes so far as to say, that the dispute on this point between Anglicans and Romanists is 'probably a dispute about words' (*Eirenicon*, 229). For the Lutheran views as to the mode of the presence, see IMPANATION: REAL PRESENCE. According to the Rom. Cath. doctrine, which has been explicitly defined as an article of faith (Council of Trent, Sess. xiii. Can. 2), 'the whole substance of the bread is changed into the body of Christ, and the whole substance of the wine into His blood, the species alone remaining.' What is the precise philosophical meaning of the word 'species,' called also 'accidents,' in this definition, is not declared; but in popular language it may be described as meaning the appearances, i.e., those qualities or conditions of bread and wine which produce on the senses the impression of the pres-

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ence of bread and wine. It is not taught, however, that in the change called T., the body and blood of Christ are formed out of the substance of the bread and wine, but that, in virtue of the Eucharistic consecration, the substance of bread and wine ceases to exist, and that the body and blood of Christ take their place; nor that the body and blood of Christ become what the schoolmen call the 'subject' of the 'accidents' of the bread and wine, but merely that, by a miraculous suspension of the ordinary law, the senses still continue to receive from the Eucharistic elements all the same impressions which they had previously received from the bread and wine; viz., of color, taste, smell, solidity, extension, figure, etc.

For the history of the controversy regarding T., see LORD'S SUPPER. The objections to the doctrine have been drawn chiefly from the philosophical difficulties involved in it; and the defenders of it have mostly contented themselves with resting on the proofs which they draw from Scripture and tradition, and a general demonstration that the doctrine, though mysterious, does not involve any philosophical repugnance or impossibility, and that the philosophical arguments against it are at the least not conclusive. Some Rom. Cath. philosophers have even undertaken to demonstrate the possibility of T. by philosophical arguments; and it is especially remarkable that the celebrated Leibnitz (q.v.) not only entered at great length, and in several portions of his works, into this philosophical discussion, but professed to prove, by strict philosophical principles—by consideration of the properties of matter, of substance, of space, extension, and the like—that the essential principle of the body 'may exist in many places at the same time, nay, under far-distant and distinct species.'

TRANSUDE, v. *trăn-sūd'* [F. *transsuder*, to transude—from L. *trans*, through; *sudo*, I sweat]: to ooze or pass through the pores or interstices of a membrane or substance. TRANSU'DING, imp. TRANSU'DED, pp. TRANSUDATION, n. *trăn'sū-dū'shŭn*, the oozing of fluids or vapors through porous bodies. TRANSU'DATORY, a. *-dū-tēr-ĭ*, passing, as vapors or fluids, through porous bodies.

TRANSVAAL', THE: see SOUTH AFRICAN REPUBLIC.

TRANSVERSE, a. *trăns-vêrs'* [L. *transversus*, turned across, lying across—from *trans*, across; *versus*, pp. of *verto*, I turn]: lying or being across; running in a cross direction; cross; crosswise: in *bot.*, at right angles with the valves: N. that which crosses or lies in a cross direction: V. to alter; to overturn. TRANSVERSE'LY, ad. *-lĭ*. TRANSVER'SAL, n. *-vêr'săl* [F.—L.]: in *geom.*, a line which traverses or intersects a number of other lines: ADJ. running or lying across. TRANSVER'SALLY, ad. *-lĭ*.

TRANSYLVANIA.

TRANSYLVANIA, *trăn-sîl-vă'nî-a* (called by the Hungarians *Erdély-Ország*—Walach, *Arjal*—‘the woody and mountainous country;’ by the Germans *Siebenbürgen*, ‘seven castles,’ from the seven forts built by the Saxons which became nuclei of cities; and by the Romans *Transylvania*, from its position *beyond* the forest range which stretches s. from the Carpathians, and forms its w. boundary): principality, the most easterly territory of Austria, and since 1868 completely incorporated with Hungary, of which it now forms the e. portion. Area 21,518 sq. m. Pop. (1894) 2,247,049, of whom 55 per cent. were Roumanians, 29 per cent. Magyars and Szeklers, 10 per cent. Germans, and 50,000 Gypsies, the rest being Slavs, Armenians, Jews, and Italians. According to religious faith, the Greek Orientals number 32 per cent.; Greek Cath. 27 per cent.; Calvinists 14 per cent.; Rom. Cath. 12 per cent.; Luth. 10 per cent. T. is an elevated plateau (its lowest parts 530 ft. above sea-level) of irregular form, somewhat resembling a triangle of which the upper part has been irregularly removed, and is bounded partially on the n., and wholly on the e. and s., by a high range of mountains—continuation of the Carpathians—which sends out innumerable lateral ridges toward the centre of the country, and along the w. frontier; so that T. is an almost perfect natural fortress. There are no plains except where a river basin widens out; but the valleys are numerous and exceedingly picturesque. Almost the whole country is drained w. into the Danube, by the Theiss and its feeders in the n., and by the Maros, tributary of the Theiss, and its feeders, in the centre and s.; the s.e. corner is drained by the Aluta, or Alt, which, after a winding course, breaks through the s. bounding range near Hermannstadt; while a number of streamlets wind their way through the e. range, and join the Sereth. The climate is more healthful and temperate than that of Hungary, the mountain-chain along the s. frontier keeping off the hot winds. The soil is extremely fertile; but much arable land is still uncultivated. The valleys and hillsides give abundant pasturage to numerous herds of cattle and droves of horses; the cultivated districts yield good crops of maize, rye, barley, oats, all sorts of leguminous plants, tobacco, saffron, madder, hemp, and flax. Culture of fruits is extensive, and immense quantities of apricots, peaches, plums, apples, pears, and walnuts are annually produced. The extensive forests, covering nearly 5,300,000 acres, contribute largely to the wealth of the country. The vine is extensively cultivated, and, in spite of defective preparation, the product is excellent in quality. The mineral wealth of T. is great; gold is found more abundantly than silver, and silver than copper; yet there are few gold mines regularly worked, and no thorough investigation of the gold deposits seems to have been made. Iron is abundant at Torockzo, copper, at Balan, lead at Rodna; the other minerals are mercury, manganese, antimony, sulphur, arsenic, vitriol, alum, marble, etc. Coal is not absent; but firewood is so abundant and cheap,

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that no other combustible has been sought; and even the extensive tracts of peat lie undisturbed. Rock-salt is abundant. T. has almost no manufactures, and the isolation of the country, lack of enterprise, and absence of good roads, have reduced commerce far below a fair proportion to the amount of the country's produce.

Of the various races which now inhabit T., the Walachs, the earliest possessors, though far most numerous, were till recently subordinated to the other races of T.; but since the revolution of 1848-9, have acquired a position in the country which, by all means, honest or dishonest, they are striving to improve; the Magyars entered as conquerors in the 10th c., and still constitute the nobility and gentry of the land; the Saxons were introduced 1143 and 1247 from the Rhenish provinces of Lower Saxony, by Kings Geysa II. and Bela IV. of Hungary, and received special privileges and immunities to induce them to settle in the country, and improve the cultivation of the soil; and the Szeklers, or Szekhelyi, are believed to be descendants of the once formidable Huns. The last three are the dominant races of T., and live apart from each other—the Magyars occupying the w. and centre, the Saxons the s. and n.e., and the Szeklers the s.e. The Magyars, Bulgarians, and Armenians speak the Magyar language as used in Hungary; the Saxons employ Low-German in speaking, and High-German in writing, but with considerable mixture of Magyar in both; the Szeklers speak a Turanian dialect; and the Walachs use their own language intermixed with corrupt Latin.—T. is little noticed in history till the Christian era, when part of it was occupied by the warlike Dacians, soon after whom the Sarmatian tribes of the Jazyges and Carpi settled in it. The conquest of the Dacians by Trajan, however, did not include that of the other two peoples, who proved very troublesome to the Roman settlers along the Danube, till they were conquered by Diocletian, and the Carpi carried away to Pannonia and other districts. In the middle of the 4th c., the Goths overran the country, defeating the Sarmatians in a great battle on the Maros, in which the monarch and the chief of his nobility perished; and they in their turn were forced, in 375, to retire before the Huns and their confederates. The Gepidæ next took possession of T. till their almost complete extirpation 566 by the Lombards and Avars. T. was conquered by the Hungarians about 1000, and was governed by Woivodes till 1526, when the death of the Hungarian monarch at Mohacs prepared the way for union of the two countries under the Woivode, John Zapolya; but the war which thence arose with the Austrians caused their complete severance, and Zapolya's sway was, 1535, confined to T., of which he became sovereign lord, under protection of the Turks. T., on its conquest by the Hungarians, was only partially settled; the e. part constituted a grazing-ground for wandering tribes who had migrated thither. The Saxons were summoned by the Hungarian monarchs to act as a counterpoise to the increasing power of the nobles; and from

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similar motives the Burzen land was given to the Teutonic Knights, but the arrogant bearing of those soldiers of the cross soon offended their titular lord, and they were forced to leave the country. The 'golden charter' of King Andrew II. (1224) secured a perfectly free political system to the Saxons, whose 'comes' or chief was, like the head of a clan, both judge and leader, and from whom the only appeal was to the king in person. The firm protection and generous treatment accorded to the Saxons by the Hungarian monarchs were rewarded by steadfast loyalty, and succor in men and money whenever required. During the rest of the 16th c., the country was distracted by the bitter strife between the Rom. Cath. party, supported by Austria, and the Prot. party, allied with the Turks; the Protestants, headed successively by princes of the houses of Zapolya and Bathory, generally maintaining the superiority. The next chief of the Prot. party was the celebrated Botskay, whose successes against Austria extorted from the emperor an acknowledgment of the independence of T. 1606. To him succeeded Bethlem Gabor, determined foe of Rom. Catholicism and Austria, who did important service during the 'Thirty Years' War. Between his son and successor, Stephen, and Ragotski arose a contest for the crown, in which Ragotski prevailed; but on his death, the civil war was resumed, till the complete rout of the Austrians by the Turks, under Kiupruli, placed the sceptre in the hands of Michael Abaffi, who reigned, till his death 1690, as a vassal of the Porte. The Austrians now again possessed themselves of T., despite heroic resistance; and though Tekeli (q.v.) succeeded for a brief period in rolling back the invaders, the peace of Carlovitz 1699 again put them in possession; and after the death of Michael Abaffi II., 1713, T. was completely incorporated with Hungary. It was erected into a grand principality 1765. During the insurrection 1848, the Hungarians and Szeklers joined the insurgents, and forced T. to reunite with Hungary, despite the opposition of the Saxons; and the Walachs, still little better than a horde of savages, were let loose over the land to burn, plunder, and murder indiscriminately; the prostration of the country being completed in the following year during the bloody conflicts here between Bem and the Russian troops. In the same year, T. was again separated from its turbulent neighbor, and made a crown land; the portions of it which had (1835) been annexed to Hungary being restored, as well as the Transylvanian Military Frontier, 1851. In 1867 T. was again united with Hungary. It is now a province under the Hungarian crown, officially styled a grand-duchy. See *Transylvania, its Products and its People*, by C. Boner (Lond. 1865).

TRAP.

TRAP, n. *trăp* [AS. *treppe*, a trap: OHG. *trapo*, a snare: It. *trappa*, a trap, a falling door: Sp. *trampa*, a trap: Gael. *drip*, a snare: imitative of the sharp sound of a falling door]: a machine that shuts suddenly or with a spring, used for taking game or vermin; any device by which men or animals may be caught unawares; a stratagem: in *plumbing*, a contrivance in a waste-pipe, consisting of a U-shaped or double-curved pipe, with or without a valve, used to form a water-seal and thus prevent the upward passage of effluvia; a game, and the instr. used in it; the familiar name for an open carriage on springs; generally, a single-horse carriage, as a gig; *familiarly*, shrewdness: craft; a thief-catcher: V. to catch in a trap; to take by stratagem. **TRAP'PING**, imp.: **ADJ.** catching wild animals in traps: N. the art or practice of catching wild animals by traps. **TRAPPED**, pp. *trăpt*. **TRAPPER**, n. *trăp'për*, one whose occupation is to catch wild animals by means of traps. **TRAP-DOOR**, a door in a floor or a roof which shuts close like a valve. **TRAP-STAIR**, a narrow staircase or ladder leading up to a trap-door. **UP TO TRAP**, in *slang*, very knowing; up to snuff.

TRAP, v. *trăp* [F. *drap*, cloth: Sp. and Port. *trapo*, a cloth, rag: origin uncertain]: to deck; to adorn; to ornament with gay dress; to furnish with trappings (see **TRAPPINGS** and **TRAPS**, from the same root).

TRAP, n. *trăp*, or **TRAP-ROCK** [Sw. *trappa*; Dan. *trappe*, a stair: Dut. *trap*, step, degree—so called from the step-like or terraced aspect of the hills in which they occur]: in *geol.*, general term designating all the igneous rocks of various epochs down to the comparatively recent, distinct from the granites on the one hand, and the recent volcanic rocks on the other; a term embracing basalt, clinkstone, greenstone, compact felspar, hornstone, pitchstone, claystone, amygdaloid, trap-tuff, wacke, and the like. **TRAP-PEAN**, a. *trăp'pě-ăn*, or **TRAP**, a. pert. to the trap-rocks; of the nature of trap. **TRAPPOUS**, a. *trăp'pūs*, pert. to or resembling trap; partaking of the qualities of trap. **TRAP'PY**, a. *-pĩ*, resembling or composed of trap. **TRAP-TUFF**, n. *-tűf*, or **TRAP-TUFA**, *-tű'fű*, a sandstone formed of the earthy rubbings from trap-rocks.—*Trap*, or *Trap-rocks* are an important section of the intrusive rocks, igneous or otherwise, associated with strata of all ages down to comparatively recent. They are so called because, having resisted, from their greater hardness, the abrading influences which have destroyed the softer sedimentary strata, they stand out in some places like huge steps on the faces of the hills and mountains. Unlike granite, the trap-rocks are free from silica, crystallizing as a separate constituent of the rock; from the modern volcanic rocks the structural difference is very slight. The dolerite variety, composed of labradorite-felspar and augite, is largely displayed in the Palisades of the Hudson river and the Mt. Holyoke range of hills, which are great dikes from which the lateral adjacent strata have been worn away.

Trap-rocks sometimes have a dull green color, from which they derive the old name greenstone, a translation of

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the German *grünstein*. It has been shown by Delesse that many trappean rocks owe their color to a dark variety of felspar which exists in them. Some greenstones are very light green, others are so dark as to appear black, and all intermediate shades of color occur. These rocks vary also very greatly in texture: in some, the crystals are sufficiently large to be detected with the naked eye; while others are so fine-grained and compact that it is difficult to resolve the separate crystals even with the help of a lens. Experiments have shown that the size of the crystal in an igneous rock increases in proportion to the length of time during which the mass remains fluid, and so permits the continued crystalline segregation of its various ingredients. The same is true in the artificial crystallization of common salt. The vitreous trap and obsidian would accordingly represent a speedily cooled flow of liquid rock. When the crystals are extremely minute, and there is a tendency in the rock to become columnar, it is a basalt. If the felspar is a soda-felspar, either albite or oligoclase, it is diorite; and this kind of rock may be seen to advantage at Marlborough, Mass., in place; n. of New York in large boulders of a black appearance; and in many other localities. Euphotide, diallage rock, or gabbro, is a compound of Labrador felspar and diallage, a variety of hornblende; it is a coarse, or sometimes fine-grained rock, with granitic or porphyritic aspect. Hypersthene rock, or hyperite, is made up of Labrador felspar and hypersthene, another variety of hornblende; it is also a granitic-looking rock, very tough, and of grayish or greenish-black color: it is very abundant in the Isle of Skye. Distinction in varieties of hornblendic trap is based on the structure of the rock, as well as on its chemical composition. Trappean obsidian is occasionally found. Porphyritic trap is more abundant; a very black variety has received the name metaphyre. Amygdaloid is a trap with round or almond-shaped cavities, filled with agate, calcite, or other minerals, scattered through it. Trap-tuff consists of fragments of scoriæ, volcanic dust, and pieces of other rocks, forming a coarse irregular mass, sometimes bound together by a calcareous cement.

When the silica is in greater proportion than the felspar, it is called petrosilex: it is very compact, homogeneous, with flinty appearance. It forms a large proportion of the contemporary intruded trap-rocks in the Silurian measures of Wales. On the beaches s. of Boston, especially at Cohasset, petrosilex, in the shape of water-worn cobble-stones, abounds in all colors, and the most of it porphyritic. Clinkstone, or phonolite, is a variety found in layers or slabs which give a metallic ring when struck with the hammer. Aphanite, or cornean, scarcely differs from true felstone, except that it is more compact and tougher. Pitchstone, or retinite, is a vitreous felstone, less glassy than obsidian, and of green color and resinous lustre. When distinct crystals of one or more minerals are scattered through an earthy or compact base of felstone, a felspathic porphyry is formed. The ancient red porphyry of

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Egypt, known as *rosso antico*, belongs to this set of rocks; it consists of a red felspathic base, in which are dispersed rose-colored crystals of oligoclase, with some plates of blackish hornblende and grains of oxidized iron-ore. The antique green porphyry has a very dark green felspathic mass, with light green or white crystals of felspar.

It is to be noted that the material of dikes may have come up in a wet and pasty state, not igneous necessarily; also that some of the varieties of so-called igneous rock are simply metamorphosed strata of rocks originally sediments.

TRAPA, *trăp'a*: genus of plants, of nat. order *Haloragiceæ* (q.v.), having a 4-parted calyx, a 4-petalous corolla, and a nut on which the altered calyx appears in the form of spines; the cotyledons very unequal in size. All the species are aquatic, with floating habit. *T. natans*, the WATER CALTROP, is the only European species. It is found in ditches and ponds in s. Europe, and is grown in ponds in Holland. The floating leaves are rhomboidal, toothed, and smooth; those under water are cut into capillary segments. The fruit has four spines; the kernels are large and almond-like. They are good as food, either raw or roasted, and somewhat resemble chestnuts in taste. They are often used in soups. The French name is *Marron d'Eau* (Water Chestnut).—*T. bispinosa*, the SINGHARA NUT, affords a great part of the food of the inhabitants of Cashmere, and a tax on it by Runjeet Singh yielded a large sum annually.—*T. bicornis* is much cultivated in China, where the cultivation of aquatic plants is carried to a degree unknown in other parts of the world. Its fruit, much used for food, has a marvellous resemblance to a buffalo's head; the horns, the tuft of hair on the crown, the eye-cavities, and the nose are there in miniature. These fruits, of dark-brown color, with hard, polished shell, are sold in the streets of New York.

TRAPAN, v. *tră-păn'* [from TRAP 1 (q.v.)]: to catch by stratagem (see TREPAN 2, which is now the usual spelling): N. a trap; a snare.

TRAPANI, *tră'pă-nē* (anc. *Drepănnum*): one of the principal seaports of Sicily, on Cape T., on the extreme n.w. coast of the island; cap. of the province of T., 40 m. w. of Palermo. The town is walled and defended by a fortress. The streets are wide, and well paved with flagstones. There is a natural harbor, admitting vessels of about 300 tons; a handsome town-house; a tower built by the Saracens; a cathedral; and many churches, some containing fine paintings. The inhabitants are engaged in the tunny, anchovy, and coral fisheries. The coral is brought from the coast of Barbary to T. to be cut and polished for exportation. T. is a busy town, and exports sumach, salt, soda, coral, alabaster, wine, tunny, and anchovies.—Pop. (1901) 59,452.

Ancient *Drepanum* was founded probably by the Carthaginians, under whom it became an important stronghold. Here took place a celebrated naval engagement between the Romans, under P. Claudius, and the Carthagin-

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ians, under Adherbal, B.C. 249, in which the Romans were completely defeated. In Roman history, the name scarcely appears, but T. seems to have flourished in obscurity both then and during the middle ages.

TRAPE, v. *trāp*, and TRAIPISE, v. *trāps* [Scot. *trype*, to walk in an untidy manner]: in *old* and *prov. Eng.*, to trail or walk along in an untidy manner; to gad about. TRAPES, n. *trāps*, an idle sluttish woman: V. to gad about. TRAPES-ING, imp.: ADJ. or N. *trāps'ing*, gadding or gossiping about, generally applied to slatternly girls and women. TRAPSED, pp. *trāpst*.

TRAPEZIUM, n. *tră-pě'zī-ŭm*, or TRAPEZE, n. *tră-pěz'* [L. *trapezium*—from Gr. *trapēzīōn*, a small table or counter, dim. of *trapēz'a*, a table: F. *trapèze*]: in *geom.*, a plane figure contained by four straight lines, no two of which are parallel; a bar fastened to the ends of two suspended ropes on which various feats of agility are performed. TRAPEZIUM, n. in *anat.*, one of the small bones of the wrist; plu. TRAPEZIA, *-zī-ă*, or TRAPEZIUMS, *-zī-ŭmz*. TRAPEZIFORM, a *-fawrm* [L. *forma*, shape]: having the shape of a trapezium. TRAPEZIUS, n. *-ŭs*, in *anat.*, a triangular muscle attached to the shoulder and the spine. TRAPEZOID, n. *trăp'ě-zoyd* [Gr. *trapez'īōn*, a trapezium; *eidos*, resemblance]: in *geom.*, a plane figure contained by four straight lines, having two of the opposite sides parallel; in *anat.*, one of the bones of the wrist resembling the *trapezium*, but smaller; plu. TRAPEZOID'ES, *-zoyd'ēz*. TRAPEZOID'AL, a. *-ăl*, having the form of a trapezoid. TRAPEZOHEDRON, n. *trăp-ě-zō-hě'drōn* [Gr. *hedra*, a seat, a base]: a solid figure bounded by twenty-four equal and similar trapeziums.—*Trapezium* is the general term for a four-sided plane figure, and is synonymous with 'quadrilateral.' But since all four-sided figures which have parallel sides possess distinctive appellations, the term T. is generally restricted to quadrilaterals whose sides are not parallel. The T. in the restricted sense (exclusive of parallelograms) has some remarkable properties: thus, if its sides be bisected, and the adjacent points of bisection joined, the resulting four-sided figure is a parallelogram; the sum of the squares of its diagonals is equal to the sum of the squares of the sides, together with four times the square of the line joining the middle points of the diagonals; if it can be inscribed in a circle (i.e., if its four corners are in the circumference of any circle), the one pair of opposite angles is equal to the other pair, and the sum of the rectangles by each pair of opposite sides is equal to the rectangle by the diagonals; if it can be described about a circle (i.e., if a circle can be made to touch on the interior, each of the four sides), the one pair of opposite sides is equal to the other pair.

TRAPPEAN, TRAPOUS, TRAPPY: see TRAP 3.

TRAPPINGS, n. plu. *trăp'pīngz* [Sp. *trapo*, a cloth, a rag (see TRAP 2)]: ornamental articles of dress; furniture; external and superficial decorations; ornamental housings for horses.

TRAPPIST.

TRAPPIST, n. *trăp'pist*: member of an order in the Rom. Cath. Church, noted for extraordinary austerities—named from La *Trappe*, an abbey of the Cistercian order in Normandy, founded in the 12th c. The discipline of this monastery, in common with many others of the more wealthy monastic bodies, especially of those which, by one of the corruptions of the period, were held *in commendam*, had become much relaxed; and in the 17th c. little trace of the ancient religious observance remained. In the first half of that century, the abbey of La Trappe fell, with other ecclesiastical preferments, to the celebrated Armand Jean le Bouthelier de Rancé (q.v.), who undertook 1662 a reform of his monastery, and in the end the establishment of what was equivalent to a new religious order. His firmness and vigor overcame the early violent opposition. He himself, as evidence of complete change of life, entered on a fresh novitiate 1663; and in 1664 made anew the solemn profession, and was reinstalled as abbot; from which date began the new austerities which have characterized the order. The monks were forbidden the use of meat, fish, wine, and eggs. All intercourse with externs was cut off, and the old monastic habit of manual labor was revived. The reform of De Rancé is founded on the principle of perpetual prayer and entire self-abnegation. By the T. rule, the monks are obliged to rise at 2 A.M. for matins in the church, which lasts till 3:30; and after an interval in private devotion, they go at 5:30 to the office of prime, which is followed by a lecture. At 7, they engage in their daily tasks, indoors or out, according to the weather. At 9 30, they return to the choir, for the successive offices of terce, sext, and none; at the close of which they dine on vegetables without butter or oil, and a little fruit. This meal is succeeded by manual labor for two hours, after which each monk occupies an hour in private prayer or reading in his own cell until 4 P.M., when they again assemble in the choir for vespers. The supper consists of bread and water, and after a short interval of repose, is followed by a lecture. At 6, they recite compline in choir, and then spend half an hour in meditation, retiring to rest at 8 o'clock. The bed is a hard straw mattress, with coarse coverlet; and the T. never lays aside his habit, even in sickness, unless the sickness prove extreme. Perpetual silence is prescribed, unless in cases of necessity. The minor practices and observances are devised to remind the monk at every turn of the shortness of life and the rigor of judgment; and the last scene of life is made signal in its austerity by the dying man being laid during his death-agony upon a few handfuls of straw, that he may lay aside on the very brink of the grave even the last fragment of earthly comfort to which the necessities of nature had compelled him to cling.

The reformed order of La Trappe scarcely extended beyond France in its first period. The inmates of La Trappe shared, at the Revolution, the common fate of religious houses in France: they were compelled to quit their monastery; but a number of them found a shelter in Switzerland:

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and when driven thence, about 250 of them found refuge eventually, under Czar Paul, in Lithuania and White Russia. Later in the war, small communities obtained footing in Italy, Spain, the United States, England, and even in France. After the Restoration, they resumed, by purchase, possession of their old home at La Trappe, which continues to be the head monastery of the order, and numbers nearly 200 members. In more recent years, they have formed many establishments in Europe; and others with extensive territory annexed, in Ky., Iowa, and other states. Many Trappists, however, were expelled anew from France (1880) under the Ferry laws.—A modification of the T. order, called 'T. Preachers,' was established at Pierre-qui-Bire, near Avallon.—See Gaillardin's *Trappistes; ou l'Ordre de Citeaux au 19 Siècle* (Paris 1844).

TRAPS, n. plu. *träps* [a corruption of TRAPPINGS]: in familiar language, articles for dress or ornament easily packed and carried about; belongings; luggage; 'things.'

TRASH, n. *träsh* [OE. *trash* or *trousse*, clippings of trees: Norw. *trosa*, to make a sound as of breaking, to break to bits: Icel. *tros*, rubbish: comp. OF. *dresche*, brewer's grains]: waste or worthless matter; refuse; in the W. Indies and other sugar-growing regions, the decayed leaves and crushed stems of the sugar-cane; Bagasse (q.v.): a worthless person: V. to free from worthless matter; to lop. TRASH'ING, imp. TRASHED, pp. *träsh't*. TRASHY, a. *träsh'î*, waste; worthless; rejected. TRASH'INESS, n. *-î-nēs*, state of being trashy.

TRASH, v. *träsh* [comp. Gael. *trasd*, athwart]: to hold back or restrain, as by a leash or the like; to clog; to encumber; to thwart or cross one's purpose or intentions: N. a piece of leather, couple, or light weight, put on an over-swift hunting-dog to lessen his speed; hence, any hindrance. TRASH'ING, imp. TRASHED, pp. *träsh't*.

TRASIMENUS LACUS, *träš-î-mē'nūs lāk'ūs*: ancient name of an Italian lake (*Lago Trasimeno*, or *Lago di Perugia*), between the towns of Cortona and Perugia; about 10 m. long by 8 broad; greatest depth not more than 30 ft. The lake has no apparent outlet, and the margins are flat and overgrown with reeds. It is surrounded by hills, those on the n. side, extending from Cortona to the lake, being known as the Gualandro Hills—*Montes Cortonenses* of Livy—covered at the present day with oak, vine, and olive plantations. The lake contains three islands.—T. L. is memorable chiefly for the great victory by Hannibal B.C. 217, during the Second Punic War, over the Romans, under their consul, C. Flaminius. Hannibal, leaving Fæsulæ, passed close by the camp of Flaminius at Arretium, laying waste the country as he proceeded in the direction of Rome. This, as the Carthaginian gen. intended, induced the consul to break up his encampment, and follow in pursuit, Hannibal meantime taking a strong position on the hills on the n. side of the lake, along which he was passing. The consul, coming up early next morning, when the whole place was enveloped in mist, saw only the

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troops in front on the hill of *Tuoro*, with whom he was preparing to engage, when he found himself surrounded and attacked on all sides. The Carthaginians thus had the Romans completely in their power, and took such advantage of the opportunity, that 16,000 Roman troops are said to have been either massacred or drowned in the lake, Flaminius himself being among the first who fell: 6,000 troops who had forced their way through the enemy, surrendered next day to Maharbal. It is said by both Livy and Pliny that the fury on both sides was so great as to render the combatants unconscious of the shock of an earthquake which occurred during the battle.

TRASKITES, n. plu. *trăsk'īts*: in *chh. hist.*, name formerly given to the Seventh-day Baptists, from John Trask or Traske, who in the 17th c. advocated their opinions.

TRAS-OS-MONTES, *trăs-ôs-môn'tēs* (Beyond the Mountains): province of Portugal, forming the n.e. corner of the country, bounded n. and e. by Spain, s. by the river Douro, and w. by the Portuguese province Minho; 4,275 sq. m. It is in the main a high plateau, with bare mountain masses (Mt. Zinho, 7,445 ft.), broken by deep romantic ravines, wild and picturesque; but the port-wine district, known as the *Alto-Douro*, is very pleasant. Wheat and rye are raised, but the chief products are wine and oil. In several places silkworm cultivation is successful. Fruits, especially oranges, are produced abundantly in the valleys, and sumach on the mountains, which are also rich in unutilized metallic wealth.—Pop. (1881) 396,676.

TRASS, n. *trăs*, or TARRASS, n. *tăr-răs'* [prov. Ger. *trass*—from L. *terra*, earth]: in *geol.*, a tufaceous alluvium or volcanic earth which occupies wide areas in the Eifel district of the Rhine—used, when pulverized, as a hydraulic cement.—*Trass* resembles the Pozzuolana (q.v.) of Naples. It is of pale-yellow or grayish color, is rough to the feel, and consists almost entirely of pumice, in which are imbedded fragments of basalt, burnt shale, slate, sandstone, etc., and even numerous trunks and branches of trees.

TRAUMATIC, a. *traw-măt'ik* [Gr. *traumatikōs*, of or for wounds—from Gr. *trauma*, a wound]: arising from wounds or local injury; vulnerary: N. a medicine useful in the cure of wounds. TRAUMAT'ICINE, n. *-ī-sîn* a wound-healer—applied to a preparation of gutta-percha for covering wounds. TRAU'MATISM, n. *-mă-tīzm*, the condition of the system occasioned by a grave wound.

TRAVAIL—TRAVEL.

TRAVAIL, v. *trāv'ěl* [F. *travail*, pains, work: It. *travaglio*; Sp. *trabajo*, labor, properly a break for vicious horses: W. *trafu*, to stir, to agitate; *traf*, a stir, a strain: derived by some from a supposed mid. L. *travārē*, to make with beams, to pen, to shackle, to embarrass—from L. *trabs* or *trabem*, a beam]: to work or labor excessively; to toil; to suffer the pains of childbirth; to disturb greatly: N. labor with pain; the pangs of childbirth. **TRAV'AILING**, imp.: **ADJ.** in the pains of childbirth. **TRAVAILED**, pp. *trāv'ēld*.

TRAVANCORE, *trāv-an-kōr'*: protected state in the extreme s. of India; bounded e. by the states of Tinneveli and Madura, w. by the Indian Ocean; 6,730 sq. m. At the s. extremity of the state is Cape Comorin (properly, Kumarin). On the elevations the soil is light and gravelly; in the valleys it is in general a deep black mold. Rice, the sago-palm, and vegetables are principal products. Formerly, the cap. was Travancore, a decayed and unimportant town; the present cap. is the small town Trivanderam.—P. of state (1881) 2,401,158; (1901) 2,952,157.

TRAVE, n. *trāv*, or **TRAVIS**, n. *trāv'is* [OF. *traf*; It. *trave*, a beam, a large piece of timber—from L. *trabs* or *trabem*, a beam]: a wooden frame to confine an unruly horse while being shod; in *OE.*, a beam or a lay of joists. **TRAV'IS**, n., or **TRAV'ISES**, n. plu. *-ī-sēz*, in a *byre* or *stable*, a low separating division or partition between the stalls for the animals, made of flags of stone set upright.

TRAVEL, v. *trāv'ěl* [a different spelling and application of *travail*: It. *travaglio*; Sp. *trabajo*; F. *travail*, properly a drag for horses, then pains, labor, work: W. *trafu*, to stir, to agitate (but see also **TRAVAIL**)]: to pass through; to journey over; to go a march on foot; to pass to a distant place or country; to visit various parts of the world by sea or by land; to visit various places, as the agent of a wholesale house, to effect the sale of goods among retailers; to pass, as, time *travels*: N. a passing from one place to another; a journeying to or through a country; in *OE.*, for **TRAVAIL**, labor in childbirth. **TRAV'ELLING**, imp. walking; going: **ADJ.** pertaining to travel; itinerant; moving; movable: N. a passing through a country or countries. **TRAV'ELLED**, pp. *-ēld*: **ADJ.** having made journeys. **TRAV'ELS**, n. plu. *-ēlz*, an account of things seen, with observations thereon, during a journey or journeys; the journeys themselves, as, he has returned from his *travels*. **TRAV'ELLER**, n. *-ēl-lēr*, one who is travelling, or who has travelled, in distant countries; a wayfarer; an agent of a wholesale house who travels from one place to another to effect the sale of goods among retailers or manufacturers: among *seamen*, a ring or hoop that slides along a rope or boom. **TRAVELLER'S-JOY**, the shrub *Clemātis*; *C. Vital'ba*, ord. *Ranun'culācēæ*. **TRAVEL-STAINED**, a. having the clothes soiled through travel. **TRAVEL-TAINTED**, in *OE.*, fatigued with travel; harassed.

TRAVELLERS—TRAVELLER'S-TREE.

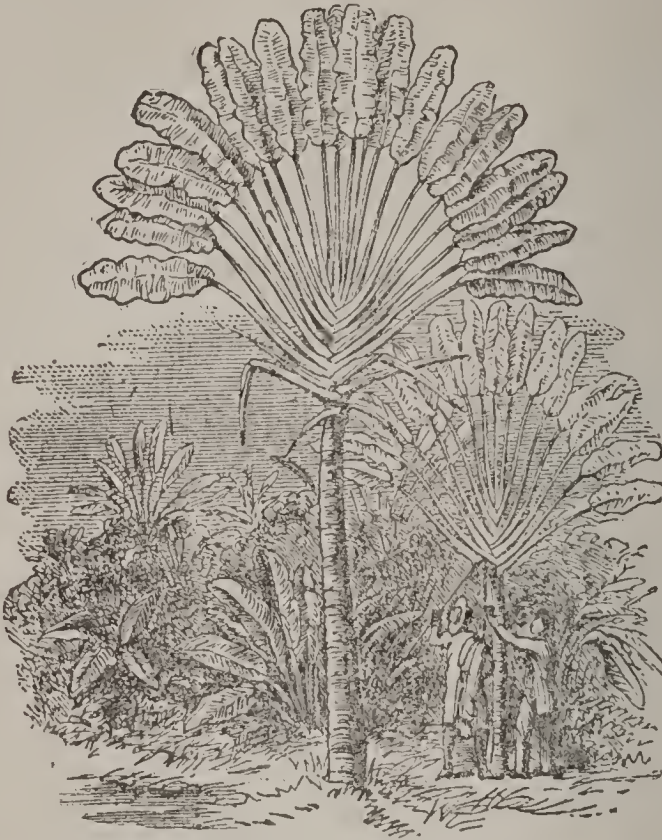
TRAVELLERS, LAW AS TO: the law affecting passengers by land, in a carriage or public conveyance, may be stated as follows: The owners of the railroad or other carriage do not contract to carry the passenger with perfect safety; they do not warrant that he will not be injured; they contract merely to carry him without any negligence on their part. Hence, in case of accident, though it is not strictly correct in law to assume that the accident arose from some negligence of the carrier unless there is evidence for this, this presumption is in fact made, and it lies on the carrier to show that it was from no fault or negligence on his part that the accident happened. As questions of negligence must almost always be decided by a jury, and their prepossessions are against admitting the idea that accidents arise from any cause except negligence of the carrier—in the main a wholesome doctrine—a railroad or public company seldom attempts to dispute their responsibility on that ground. The rule is that a railroad company is responsible for the negligence of any of their servants; hence, in case of accidents, all passengers injured—and in case of death the parent, husband, wife, or children of the deceased passenger—commonly make a claim of compensation, except when the accident was evidently due to the passenger's own negligence. For the passenger is bound to take ordinary care of himself, avoiding rashness or foolishness which might lead to an accident. Railroad companies are not bound to carry everybody who comes, but merely to give reasonable accommodation to the ordinary number, otherwise their liability would be enormous on particular occasions where crowds assemble. Their interest is usually a sufficient inducement on such occasions to provide the accommodation required. A passenger has a right to carry with him Luggage (q.v.).

In the case of passengers by sea or by inland water-routes, a peculiar code has been constructed, owing to the peculiarity of their situation. Thus, an act of congress (*Revised Statutes*, § 4252) fixes the number of passengers that may be taken on board any vessel; the space allowed to each passenger; and makes many special regulations for the safety and comfort of passengers, too minute to be enumerated here.

TRAVELLER'S-TREE (*Urania speciosa*, or *Ravenala Madagascariensis*): remarkable plant of nat. order *Musaceæ*, native of Madagascar, and forming a characteristic feature of the scenery of many parts of that island. The stem resembles that of the plantain, but sends out leaves on only two opposite sides, like a great expanded fan. The lower leaves drop off as the stem grows, and in an old tree the lowest leaves are sometimes 30 ft. from the ground. A tree often has 20 or 24 leaves, the stalk of each leaf being 6 or 8 ft. long, and the blade 4 or 6 ft. more. The blade of the leaf is oblong, bright green, and shining. The fruit is not succulent, but is filled with a fine silky fibre of brilliant blue or purple color, among which are 30 or 40 seeds. 40 or 50 fruits grow in a bunch, and three or four bunches may be seen at once on the tree. The leaves

TRAVEMÜNDE—TRAVERSE.

are much used for thatch, and for many other purposes; and the leaf-stalks for the partitions, and often even for the walls of houses. The leaf-stalks always contain water, even in the driest weather—more than a quart being read-



Traveller's-tree (*Urania speciosa*).

ily obtained by piercing the thick part of the base of a leaf-stalk; and this water is pure and pleasant: hence the name *Traveller's-tree*.

TRA'VEMÜNDE: see LÜBECK.

TRAVERS, ad. *trāv'ers* [see TRAVERSE]: athwart; across.

TRAVERSE, a. *trāv'ers* [OF. *travers*, across—from L. *transversus*, turned across—from *trans*, across; *versus*, pp. of *verto*, I turn: It. *traversa*; F. *traverse*, a cross-beam of timber]: lying across; in a direction across something else; transverse; crosswise; athwart: N. anything laid or built across; anything that thwarts or crosses; an unlucky accident: in *fort.*, a parapet and trench across a ditch—a detached parapet and trench on the flank of any work to protect the defenders from any enfilading fire—generally a parapet with banquette and palisade thrown across the whole width of the covered-way: among *seamen*, the zigzag course made by a vessel compelled to tack: in *arch.*, a gallery or loft of communication in a church or other large building: in *law*, a denial of some matter of fact by the opposite party: V. to place in a cross direction; to thwart; to travel over; to wander over; to pass over and view; to survey or examine thoroughly; to turn and point, as a cannon, in any direction: in *law*, to deny what has been advanced by the opposite party: in *fencing*, to oppose a movement; to turn, as on

TRAVERSE CITY—TRAVESTY.

a pivot: AD. crosswise; athwart. TRAV'ERSING, imp. pass. ing over; thwarting; denying. TRAV'ERSED, pp. -*erst*. TRAV'ERSEER, n. -*sēr*, one who opposes a plea in law: in *rail.*, a traverse-table, which see. TRAV'ERSABLE, a. -*sā-bl*, that may be traversed or crossed; that may be denied. TRAVERSE-SAILING, the case in plane-sailing when the ship makes several courses in succession, the track being zigzag, and the directions of its several parts lying more or less athwart each other. TRAVERSE-TABLE, a table used in 'resolving a traverse' that is, in computing the departure made in traverse-sailing; in *rail.*, a platform with one or more tracks, and arranged to move laterally on wheels for the convenience of shifting carriages, etc.

TRAVERSE CITY, *trāv'ērss*: city, cap. of Grand Traverse co., Mich.; on Grand Traverse Bay, and on the Grand Rapids and Indiana and the Chicago and Western Michigan railroads; 144 m. n. of Grand Rapids. It contains 10 churches, graded schools, library, 1 national bank, 1 state bank, and 4 newspapers; and has several saw, planing, and flour mills. Regular lines of steamboats connect T. C. with all ports and important landings on Lake Michigan. The city is noted as a summer resort and as a large lumber-exporting port.—Pop. (1880) 1,897; (1890) 4,353; (1900) 9,407.

TRAVERSING PLATFORM: arrangement to facilitate movement of cannon in battery. The gun is mounted either on an ordinary truck-carriage, or on rollers under its trunnions. The truck or rollers work in and out on two parallel iron rails 16 ft. or more in length, mounted on the traversing carriage. Wheels at each end of this platform (or more frequently if the weight of the gun be very great) are placed at right angles to the direction of the rails, and run on circular tramways, which have their centre in the embrasure through which the gun is fired. The rails incline toward the rear, to moderate the gun's recoil. The advantages are that the leverage for turning the gun is increased by the platform's length, while the circular rails diminish the resistance; that the gun is easily run out for firing on the upper rails; that by its own recoil it runs itself in again for loading; and that a much smaller embrasure is required to give a good compass to the muzzle.

TRAVERTINE, n. *trāv'ēr-tīn* [It. *travertino*, *tibertino*, travertine: L. *lapis Tiburtinus*, the stone of *Tibur*—from anc. *Tibur*, the modern Tivoli, near Rome, at which travertine is abundantly formed from the waters of the Anio]: a whitish concretionary limestone deposited from the water of springs holding lime in solution; calcareous tufa or calc tuff.

TRAVESTY, v. *trāv'ēs-tī* [F. *travestir*, to disguise, to travesty—from L. *trans*, across, over; *vestirē*, to clothe—from *vestis*, a garment]: to translate or parody in such a manner as to render ridiculous or ludicrous; to turn into burlesque: N. a burlesque translation or imitation of a work of a dignified or serious character. TRAV'ESTYING, imp. -*tī-ing*, turning into ridicule. TRAV'ESTIED, pp. -*tīd*,

parodied; turned into ridicule.—*Travesty* differs from Parody (q.v.) which changes the subject-matter and the *dramatis personæ*, but mockingly imitates the style of the original, while T. leaves the subject-matter partially, and the *dramatis personæ* wholly, unaltered; producing a purely comic effect by the substitution of the mean, the frivolous, and the grotesque in action or speech, for the serious, the noble, or the heroic.

TRAVIS: see TRAVE.

TRAVNIK, *tráv'nik*: town of Bosnia (now under Austrian administration), formerly the cap. of Bosnia; on the Lasva river, 45 m. w.n.w. of Bosna-Serai. Its numerous mosques, and the castle, dating from the middle ages, are the principal edifices. The people mostly are Mohammedans. The principal industry is manufacture of sword-blades.—Pop. 12,000.

TRAWL, v. *trawl* [from Eng. *trail*; mid. L. *tragŭla*, a sled—from L. *trahĕrĕ*, to drag]: to fish by trailing or dragging a net sunk in the water behind a boat or vessel: N. a line of very great length, with numerous smaller lines attached, used in haddock-fishing, etc.: the large net used in trawling. TRAWLING, imp.: ADJ. dragging a net for fish; using a drag-net: N. the act of dragging for fish with a net; also, in the United States and Canada, trolling, or fishing with a Troll (q.v.). TRAWLER, n. *-er*, one who trawls; a small vessel used in fishing with the trawl-net. TRAWL-NET, the large purse-shaped net, about 70 feet long, and with a breadth of 40 feet at the mouth, used by trawlers.

TRAWLING: mode of fishing by a net dragged along the bottom of the sea, behind a boat, and much employed in deep-sea fishing. The net used, called a *trawl*, *trawl-net*, or *beam-trawl*, is a triangular purse-shaped net, about 70 ft. long, usually about 40 ft. wide at the mouth, and gradually diminishing to 4 or 5 ft. at the beginning of the *cod*, or smaller end of the net, which is about 10 ft. long and of nearly uniform breadth. The upper part of the mouth is secured to a wooden beam about 40 ft. long, which keeps the net open; this beam is supported on two upright iron frames, known as the *trawl-heads* or *irons*. The under side of the net corresponds with the upper, except that instead of being fastened to a beam, it is made with a deeply-curved margin attached to the *ground-rope*, the whole length of it in contact with the ground. A trawl has also generally two *pockets*, one on each side, made by lacing together the upper and under parts, so that fish turning back from the cod may be caught in them. The meshes vary in size from four inches square at the mouth, to an inch and a quarter square in the cod. Two stout ropes, of about 15 fathoms each, are fastened, one to the front of each of the trawl-heads, the other ends united to form a bridle, to which is shackled a warp 150 fathoms long. By this warp the trawl is towed, the quantity of rope paid out depending on depth of water, weather, and other conditions. Trawling is generally in the direction of the tide, sometimes across it, never against it. The rate of progress is

TRAY—TREAD.

usually only from half a mile to two miles an hour faster than that of the stream. The trawl can be used with advantage only on a sandy bottom or other smooth ground: on rough ground, the net would be torn in pieces. The vessels employed in trawling on the Dogger Bank and elsewhere near the British coast vary in size from 35 to 60 tons. Many of these trawlers, however, stay out at sea six weeks at a time in all seasons of the year; their fish being packed in ice collected by fast-sailing cutters, and so conveyed to market. Cod, haddock, and other *white-fish* are caught in great numbers by trawling; and some kinds of flat-fish, as soles, are scarcely to be obtained by any other means. Smaller trawl-nets than those above described are used in bays and estuaries. A *pole-trawl* is a less effective kind of trawl, now little used.—See NETS.

TRAY, *n.* *trā* [Dut. *draagen*, to carry; *draag-bak*, a hod for carrying mortar]: a very shallow trough employed for a variety of purposes in domestic use; a tin board; a kind of salver or waiter; any similar shallow trough.

TREACHEROUS, *a.* *trěch'ér-ūs* [F. *tricherie*, trickery; *tricher*, to cheat: Dut. *trekken*, to draw, pull; *trek*, a trick (see TRICK)]: faithless; perfidious; traitorous to the state or sovereign; betraying a trust; not to be relied on. TREACH'EROUSLY, *ad.* *-lī*. TREACH'EROUSNESS, *n.* *-nēs*, treacherous character. TREACH'ERY, *n.* *-ĭ*, betrayal of trust; violation of faith and confidence; violation of allegiance; perfidy. TREACH'ER, *n.* *-ér*, or TREACH'OUR, *n.* *-ér*, or TREACH'E-TOUR, *n.* *-ě-tér*, in *OE.*, a traitor; a trickster.—SYN. of 'treacherous': perfidious; false; plotting; insidious; traitorous; treasonable; illusory.

TREACLE, *n.* *trě'kl* [OF. *triacle*, an old confection, considered a sovereign remedy against poison—from L. *thēriacus*; Gr. *thērīākōs*, good against the poison of animals, especially the bite of serpents—from Gr. *thērion*, a wild animal]: *formerly*, a preparation believed to be an antidote to poison, especially to poison resulting from the bite of a viper (see THERIACA): the liquid left during the process of granulating raw sugar; Molasses (q.v.); a saccharine fluid obtained from the juices of certain vegetables.

TREAD, *v.* *trěd* [AS. *tredan*; Ger. *treten*; Dut. *treden*; Dan. *træde*; Icel. *troda*; Goth. *trudan*, to tread: W. *troed*; Gael. *troidh*, the foot]: to step or walk on; to beat or press under the foot; to trample in contempt or hatred; to copulate, as cock-birds; to set in motion with the feet; to walk or go; to walk with form or state; to dance, as to *tread* a measure: N. mode of stepping; copulation, as of birds; the part of a step on which the foot is placed; the bearing part of the outer rim of a wheel; the part of a fortification behind the parapet, on which soldiers stand to fire; the width of a bicycle from pedal to pedal: in *OE.*, place trod on or used in stepping; way; track. TREAD'ING, *imp.* pressing with the foot: N. act of pressing with the foot; a walking; a stepping: in *OE.*, way, track, or path. TROD, *pt.* *trōd*. TROD, or TRODDEN, *pp.* *trōd n.* TREAD'ER, *n.* *-ér*, one who or that which treads. TREAD-MILL, machine worked by a

TREAD-MILL—TREAGUE.

man or by a number of men or by an animal treading continuously on the steps of a cylinder, used sometimes in productive labor, as in grinding corn, sawing stones or timber, etc., but chiefly as an instr. of prison discipline. **TREADLE**, n. *tréd'l*, a kind of lever acted on by the foot, forming part of many machines, and used in communicating motion to the machine or to some part of it, as the *treadle* of a loom, of a spinning-wheel, a grindstone, a bicycle, or the like; the albuminous cord which unites the yolk of the egg to the white. **TREAD OF A BANQUETTE**, in *fort.*, the upper surface of a banquette. **TREAD OF A LATHE**, the upper side of the bed between the head-stock and the back centre.

TREAD-MILL: in Prison Discipline: appliance invented by Sir William Cubit, of Ipswich, England; consisting of a wheel in the form of a long cylinder, furnished with 24 steps round its circumference, and turned on its axis by the tread of prisoners, each of whom may be made to tread in a separate compartment, so boarded off that he can have no intercourse with the others. The prisoners are supported by a hand-rail, and cause the wheel to revolve about twice in the minute. As an instrument of prison discipline, it has been generally supplanted by the *Crank*, a small flaked wheel, like the paddle wheel of a steamboat which, on the prisoner turning a handle outside, revolves within a box partially filled with gravel. The amount of strength necessary to each revolution can be regulated by the quantity of gravel used, and a register placed outside the prisoner's cell records the number of revolutions made. The crank is used only when hard-labor is part of the prisoner's sentence.

TREAD-SOFTLY, n.: in *bot.*, *Onidoscolus stimulans*, plant of the order *Euphorbiaceæ* growing in the southern states. It has palmately lobed leaves, with spreading hairs, which, when trodden on by the bare feet of the negroes, sting them severely; hence the English name.

TREADWELL, *tréd'wél*, DANIEL: 1791, Oct. 10—1872, Feb. 27; b. Ipswich, Mass.: inventor. While a child he invented a machine for making wooden screws; later inventions were—1818 a new form of printing-press; 1822 a power-press; 1826 a system of turn-outs for single-track railroads; 1829 a machine for spinning hemp; 1835 a method of making cannon from wrought-iron and steel, similar to the later Armstrong gun. With Dr. John Ware he established the *Boston Journal of Philosophy and the Arts*, 1822. He was Rumford prof. in Harvard College 1834–45, and published *The Relations of Science to the Useful Arts* (Boston 1855); *On the Practicability of Constructing a Cannon of Great Calibre* (Cambridge 1856); and *On the Construction of Hooped Cannon* (1864).

TREAGUE, n. *trég* [Sp and It. *tregua*, a truce (see **TRUCE**): in *OE.*, a truce or cessation of arms.

TREASON.

TREASON, *n.* *tré'zn* [OF. *trahison*; F. *trahison*, treason—from *trahir*, to betray—from L. *tradĕrĕ*, to deliver up, to betray (see also **TRAITOR**): a breach of fidelity; treachery: specifically, a breach of allegiance to the sovereign or state to which one owes allegiance. **HIGH TREASON**, any crime affecting the safety or dignity of a sovereign or his state. **TREA'SONABLE**, *a.* *-ă-bl*, involving or partaking of the crime of treason. **TREA'SONABLY**, *ad.* *-ă-blĭ*. **TREA'SONABLENESS**, *n.* *-bl-nĕs*, the state or quality of being treasonable. **TREA'SONOUS**, *a.* *-ŭs*, in *OE.*, treasonable.—**SYN.** of 'treasonable': treacherous; traitorous; perfidious; insidious.

TREA'SON: highest civil crime which a member of the community can commit, being treachery against the state or the sovereign.

By the ancient common law of England, there was great latitude as to what was held by the judges to be T., whereby, says Blackstone (b. iv. c. vi.), the creatures of tyrannical princes had opportunity to create abundance of constructive treasons, i.e., to raise, by forced and arbitrary constructions, offenses into the crime and punishment of T., which never were suspected to be such. Thus, the accroaching, or attempting to exercise, royal power—a very uncertain charge—has been treated as T. The injustice involved in the theory of these constructive treasons led to the passing of the statute of 25 Ed. III. c. 2, which attempted to define T., in five forms here summarized. 1. When a man compasses or imagines the death of the king, queen, or their eldest son and heir. The law on this point has often been strained, and in arbitrary reigns, even a sermon unpreached was held to convict Peachum; and a paper found in a closet, to convict Algernon Sidney, though merely speculative in its character. 2. Violating of the king's wife, or his eldest daughter unmarried, or the wife of the king's eldest son and heir. 3. Levying war against the king in his realm, either by taking arms to dethrone the king, or under pretense to reform religion or the laws; by resisting the king's forces; by joining an insurrection, with avowed design to pull down all inclosures, all brothels, and the like; though such a conspiracy, if aimed at a particular house, would be only a riot. 4. Adhering to the king's enemies in the realm by giving them any aid and comfort. 5. Lastly, slaying the chancellor, treasurer, or the king's justices of the bench, or in assize, while in their places administering justice. Between the reigns of Henry IV. and Queen Mary, the courts returned to the system of inventing constructive treasons, and actually included as such the clipping of money, burning houses to extort money, refusing to abjure the pope, etc. These and other new-fangled treasons were totally abolished by a statute of 1 Ed. VI. c. 12. By subsequent statute some other forms of T. have been indicated; and by 36 Geo. III. c. 7, whoever compasses or intends death or bodily harm to the person of the king, is to be adjudged a traitor. Some safeguards for the accused were provided by a statute of William III.—The punishment of T. formerly was severe and even barbarous. The traitor was to

be drawn on a hurdle to the place of execution, hanged by the neck, his head then severed from the body, the body divided into four quarters; and the head and quarters to be at the disposal of the crown. But 1870 these barbarities were repealed, and the sentence is now changed into hanging. The consequence of a conviction of T. formerly was forfeiture and corruption of blood; the corruption of blood having the effect that the attainted person could neither inherit lands from his ancestor, nor transmit them to any heir; but this was altered as regards England and Ireland 1870 (see *ATTAINDER*). The convict forfeits and is disqualified for any public office; the court may order him to pay the costs of his conviction, and his whole property is transferred to administrators named by the crown, who administer it and retransfer the surplus to his heirs and representatives.

Certain minor offenses, called misprision of treason, are those closely bordering on T.: such are offenses which consist in the bare knowledge and concealment of T., without any degree of assent thereto, for any assent makes the party a principal traitor. The punishment was loss of goods and lands during life. Another offense closely related to T. is that of wilfully pointing a gun at, or attempting to strike, the person of the sovereign, with intent to injure him (or her): the offense being punishable with 3 years' imprisonment. There is also an offense cognate to T., created by 11 and 12 Vict. c. 12—that of intending to depose the queen, or levying war against her in order to intimidate her or the houses of parliament. The offense of *Præmunire* (q.v.) was originally the introducing a foreign power into the country, and the name was extended to similar offenses.

In the United States, the constitution defines T. to the United States as consisting 'only in levying war against them, or in adhering to their enemies, giving them aid and comfort.' The constitution further declares that 'no person shall be convicted of T. unless on the testimony of two witnesses to the same overt act or on confession in open court.' Further that 'the congress shall have power to declare the punishment of T.; but no attainder of T. shall work corruption of blood, or forfeiture, except during the life of the person attainted' (Art III., sec. 3). T. may be committed also against any of the states of the Union: the punishment of T. is determined by the constitution of each state.

TREASURE, *n.* *trĕzh'ûr* [OF. *tresor*—from L. *thĕsau'rus*; Gr. *thĕsau'ros*, anything laid or stored up: It. *tesoro*: F. *trĕsor*: the *r* after *t* is intrusive]: a store of money in reserve; riches hoarded; a great store of anything collected for future use; something highly valued: V. to lay up or collect for future use; to hoard; to prize; to store, as in the mind. TREAS'URING, *imp.* laying up for future use. TREAS'URED, *pp.* *-ûrd*, laid up for future use; greatly valued. TREAS'URELESS, *a.* *-ûr-lĕs*, without treasure. TREAS'URER, *n.* *-ĕr*, one who has the charge of the money or funds of a society, corporation, state, etc. TREAS'URERY

TREASURY.

SHIP, n. -*shĭp*, the office of treasurer. TREAS'URY, n. -*ĭ*, a place or building in which stores of wealth are deposited; a department of government where the expenditure of the public money is managed; all the officers connected with the department; an abundant store; a repository; in *OE.*, a treasure. TREASURE CITY OR HOUSE, *anciently*, a place where treasure was deposited. TREASURE-TROVE, -*trōv* [*F. trouver*, to find]: any money, articles made of gold or silver, or the precious metals in any form, found in the earth or otherwise hidden, the owner of which is not known: in the United Kingdom all such treasure belongs by law to the crown, and the finder is guilty of an indictable offense if he fails to give it up. When given up, the crown pays the finder the full value of the treasure. In the United States the finder of a thing is its lawful custodian if the owner is unknown, and becomes its owner if the original owner cannot be found. TREASURY BOND, a species of Exchequer Bill (q.v.). TREASURY WARRANT, in Britain, official and legal notice issued by the lords of the treasury for public information. LORDS OF THE TREASURY, five state officers who have superintendence of the department for managing public finances of the United Kingdom, the chief of whom is called the first lord of the treasury, and is generally prime minister for the time being—the second being the chancellor of the exchequer, and its practical head. LORD HIGH TREASURER, formerly the third great officer of the crown in England, whose duties are—since the accession of George I.—discharged by the lords commissioners who are known as lords of the treasury. TREASURER OF THE HOUSEHOLD, officer in the lord steward's department of the royal household of the United Kingdom, who ranks next to the lord steward. He is always a member of the privy council.

TREASURY; THE: in the *United Kingdom*, the department of executive government which has control of the revenue and expenditure of the country. The Treasury Board now consists of the prime minister (generally styled first lord of the T.), the chancellor of the exchequer, and three junior lords of the T., who have usually seats in parliament, as have also the two joint-secretaries of the T. The first lord being the head of the administration, his duties are not limited to the T., which is chiefly conducted by the other members of the board. The chancellor of the exchequer, who holds under a distinct patent the office of under-treasurer, is the effective head of the T., exercising the most responsible control over the expenditure of the different branches of the service, as also over all works demanding unusual outlay in the naval, military, and civil departments. He prepares an annual estimate of the expenses of the country, and of the ways and means by which they are proposed to be met; and this statement, known as the Budget, is submitted by him to the house of commons. The prime minister, when a member of the house of commons, has occasionally held at the same time the office of chancellor of the exchequer. The duties of the junior lords are in a great measure formal; the heaviest

TREASURY DEPARTMENT—TREAT.

portion of the executive functions of the T. devolves on the secretaries.

The function of payment has ever since the Restoration been separated from the custody of the public revenue, the former only being vested in the T., while the latter belongs to the exchequer. By an arrangement effected by 4 and 5 Will. IV. c. 15, the revenue flowing into the T. is paid into the Bank of England, to the credit of the comptroller-gen. of the exchequer, and all payments on public account are made pursuant to a warrant or order of the T. No moneys voted by parliament can be drawn from the exchequer without the warrant of the T. board, nor can any payment be made from the civil list without its authority.

The duties of the T. board are numerous. The supplies for the army, navy, and civil service are issued under its authority; expenses of legal establishments, courts, sheriffs, etc., are subject to its examination. All payments for civil salaries, allowances, and incidental charges payable in England, and all payments for the army, navy, and ordnance, are made on its special authority. The boards of customs and inland revenue, and the post-office, are under its general authority. The expenses of colonial and other offices are controlled by it. The treasury possesses the patronage of the departments immediately subordinate to it.

TREASURY DEPARTMENT, UNITED STATES: one of the chief divisions of the federal executive govt. As its title indicates, the chief concernment of the T. D. is with the public revenues and the public disbursements, but it has control of a multitude of affairs which only indirectly or even not at all touch the question of disbursement and revenue: see **SECRETARIES OF EXECUTIVE DEPARTMENTS**.

TREAT, v. *trēt* [F. *traiter*; OF. *traicter*, to meddle with, to discourse—from L. *tractārē*, to treat, to handle—from *tractus*, pp. of *trahērē*, to draw]: to handle or manage in a particular manner, as to *treat* a subject exhaustively; to discourse, generally with *of*; to entertain with food or drink without cost to the guests; to behave toward; to manage, as a disease, in the application of remedies; to make and receive proposals with a view to the settlement of a claim, the adjustment of differences, etc.; to negotiate; to come to terms of accommodation; in *chem.*, to subject to the action of; in *OE.*, to entreat: N. an entertainment given as an expression of regard; something which affords much pleasure; unusual gratification. **TREATING**, imp.: ADJ. using; discoursing on; entertaining: N. act of one who treats; bribery. **TREAT'ED**, pp. **TREAT'ABLE**, a. -*ă'bl*, in *OE.*, capable of being treated; moderate; practicable. **TREAT'ER**, n. -*ēr*, one who treats. **TREAT'MENT**, n. -*mēnt*, management; manner of using; good or bad behavior of some person or thing; manner of applying remedies, as in disease. **TREAT'ISE**, n. -*īz*, a written composition in which the principles of a particular subject are discussed in a formal and methodical manner; a formal

TREAT—TREATY.

essay. TREAT'Y, n. -*ŷ* [F. *traité*]: negotiation with the view of adjusting differences; a formal agreement; a league or contract between two or more nations. To TREAT WITH, to negotiate; to propose an adjustment of differences. To STAND TREAT, to entertain at one's own expense.

TREAT, *trēt*, ROBERT: 1622–1710, July 12; b. England: lawyer. He removed to New England with Sir Richard Saltonstall; was an early settler of Wethersfield and Milford, Conn., and of Newark, N. J.; returned to Milford, Conn., 1672, where he was chosen judge, maj. of militia, and commander-in-chief of the colonial troops for the war with King Philip 1675; and drove the Indians from Northfield and Springfield, routed them in their attack on Had-dam, and took part in the battle at Narragansett Fort. T. was deputy-gov. of Conn. 1676–83 and 1698–1708, and gov. 1683–98.

TREATY: in public law, an agreement of friendship, alliance, commerce, navigation, or the like, entered into between two or more independent states. Treaties have been divided by publicists into *personal* and *real*; the former relating exclusively to the persons of the contracting parties e g., treaties guaranteeing the throne to a particular sovereign and his family; the latter relating to national objects apart from rulers, and binding the contracting parties independently of any change in the sovereignty of the states. The constitution of each particular state must be looked to, to determine in whom the power of negotiating and contracting treaties with foreign powers resides.

In republics the chief magistrate, or the senate, or executive council, or both of these conjointly, are intrusted with the exercise of this sovereign power. Treaties to which the United States govt. is a party are made, on behalf of the United States, by the pres., by and with the consent of the senate, two-thirds of the members of the senate present concurring. The several states of the Union are incompetent to form any treaty, alliance, or confederation; nor can they lawfully or validly (without consent of congress) enter into any compact or agreement among themselves or with a foreign state. A treaty made by the United States is forthwith the law of the land.

In monarchies, whether absolute or constitutional, the treaty-making power is vested usually in the sovereign. By the constitution of Great Britain, the exercise of this power is subject to parliamentary censure: ministers who advise the conclusion of any T. afterward judged derogatory to the national honor, or against the national welfare, being liable to impeachment, of which several instances appear in Eng. history.

No special form of words is necessary for the validity of a T.; but modern usage requires that a T. originally verbal should as soon as possible be committed to writing.—A class of compacts between nations are included in the exercise of a general implied power confided to certain public agents as incidental to their official position; such are the acts of generals or admirals limiting hostilities by truces, capitulations, or cartels for exchange of prisoners;

TREBBIA—TREBIZOND.

these do not require ratification by the supreme authority, unless there be a reservation making that necessary. In other cases, however, a public minister or other diplomatic agent is not entitled to conclude or sign a T. with the foreign power to which he is accredited, without a full power additional to his general letter of credence. Even in the case of a T. concluded with full powers, it is often considered expedient to have a special ratification by the sovereign, or other proper executive authority of the state contracting.

A T. is considered extinguished when one of the contracting powers loses its existence as an independent state, when the internal constitution of either state is changed so as to make it inapplicable; and in case of war between the contracting parties, unless the stipulations of the T. have been expressly with a view to the rupture. As there is often a difficulty in distinguishing stipulations perpetual in their nature, from those that are extinguished by war, it is common to insert clauses in treaties of peace reviving and confirming the treaties formerly subsisting between the contracting parties.

A *Treaty of Guaranty* is an engagement by which one state promises to aid another when it is disturbed or threatened in the peaceable exercise of its rights by a third power.

Treaties of alliance may be offensive or defensive: in the former, the ally engages generally to co-operate in hostilities against a specified power, or against any power with which the other may be at war; in the latter, the engagements of the ally extend only to a war of aggression begun against the other contracting party.

The execution of a T. is occasionally secured by hostages, as at the peace of Aix-la-Chapelle 1748, when several peers were sent to Paris as hostages for the restoration of Cape Breton by Great Britain to France.

TREBBIA, *trēb'bē-ā*: small but famous stream of Italy, rising in the Ligurian Apennines, near Montebruno, flowing n. through a mountain valley for the greater part of its course, and joining the Po two m. w. of Piacenza. Its entire length is about 50 m. On its banks Hannibal decisively defeated the Roman consul Sempronius B.C. 218.

TREB'IZOND: chief town of the eyalet T.; flourishing seaport on the Black Sea coast, about 110 m. n.w. of Erzerum. It is surrounded by walls of great extent, inclosing numerous gardens as well as the town itself. Outside the walls are suburbs, where most of the Christian inhabitants reside, and in which are the principal bazaars and khans. The city is defended by forts along the walls, and by a fortified citadel upon a high rock on one side of the town. It has a good harbor, which, however, is considered safe only in summer, the roadstead of Platena, 7 m. w., being employed for the rest of the year. There are numerous mosques and 'medressehs' (or colleges), and ten churches for Greek Christians. There are copper-foundries, dye-works, etc. The geographical position of T., is, in a commercial view, rivalled only by that of Alexandria, and

TREBIZOND—TREBLE.

has made it the great entrepôt of the commerce between e. Europe and central Asia, and the second commercial city of the Turkish empire. European goods are brought hither by regular services of steamers from Constantinople and the mouths of the Danube; and goods from Asia by caravans from Erzerum, Tabriz, and Syria. The value of annual imports by sea is about \$7,500,000; of annual exports probably about \$5,000,000. The inland traffic with Anatolia is supposed also to represent a value of nearly \$5,000,000. The goods brought overland comprise silk, wool, tobacco, wax, gall-nuts, oil, opium, drugs of various kinds, honey, timber, carpets, and shawls; and those arriving by sea are principally cotton cloths, glass, cutlery, fire-arms, grain, iron, tin, spices, etc.—Pop. of T. estimated 32,000; of whom 2,000 are Armenians, about 8,000 Greeks, and the rest Turks; (1885) 45,000; (1898) est. 35,000.

T. is the anc. *Trapezus*, and was founded by a colony from Sinope; it was a flourishing town under the Colchians, when Xenophon arrived there in his famous retreat from Persia. Conquered from Mithridates by the Romans, it rapidly rose in importance, became a free city, was made by Trajan the cap. of Pontus Cappadocicus, and by the same enlightened ruler was provided with a larger and better harbor. On the capture of Constantinople by the Crusaders 1204, and the expulsion of the Comnenian emperors, one of the imperial family, Alexis, established himself at T., where he had previously exercised the functions of governor, and founded a state known as the *Empire of Trebizond*, which stretched from the Phasis to the Halys, and maintained its independence against the Turks till 1462, when the last emperor was defeated and captured by Sultan Mohammed II.

TREBIZOND, or **TREBISOND**, *trëb'î-zönd* (in Turkish, *Tarabezûn*, Gr. *Trapezus*): Turkish eyalet in n.e. Asia Minor, stretching 240 m. along the s.e. shore of the Black Sea. The surface is mostly mountainous, the slopes toward the sea being thickly wooded. The e. portion of the eyalet is known as Lazistan, from its inhabitants, the Lazi, a savage vindictive race, notable for barbarous manners and predatory habits. The port of Batoum and a part of Lazistan on the Russian frontier were ceded to Russia 1878. Next to the chief city, Trebizond, the most important towns in T. are Samsoun, Kerasun, and Gumish-Khaneh. —Pop. (1885) 1,047,700; (1898) est. 1,163,800.

TREBLE, a. *trëb'l* [OF. *treble*, F. *triple*, threefold—from L. *tripplus*; Gr. *triplos*, threefold (see **TRIPLE**)]: threefold; acute in a threefold degree; pertaining to the voice or voice-part called treble or soprano: N. in *music*, the highest of the four parts in a harmonized piece of music, generally containing the melody, and sung by a Soprano (q.v.) voice: one who plays or sings the treble: V. to multiply by three; to become threefold. **TREBLING**, imp. **TREBLED**. pp. *trëb'ld*. **TREB'LY**, ad. *-lî*, in a threefold number or quantity. **TREBLE CLEF**, the *G clef (see **CLEF**).

TREBUCHET—TREE.

TREBUCHET, n. *trěb'û-shět* [F. *trébuchet*—from mid L. *trebuchetum*, a warlike engine—perhaps from L. *trabs*, a beam] a warlike engine used in the middle ages for throwing stones and other missiles, and sometimes fiery material, into beleaguered places; a kind of weighing-scales; a cucking-stool; a kind of trap; also written **TREBUCKET**, n. *-û-kět*.

TRECENTO, n. *tră'chěn-tō* [It., 300, but used for 1,300]: in *art.* term applied to the style of art prevalent in Italy in the 14th c.; called sometimes the Early Italian style.

TRECHOMETER, n. *trě-kôm'ê-tér* [Gr. *trechō*, I run; *metron*, a measure]: kind of Odometer (q.v.) or contrivance for ascertaining the distance run by vehicles.

TREDDLE, n. *tréd dl*: same as **TREADLE**.

TREDEGAR, *trěd'ê-gâr*: market-town on the n.w. border of Monmouthshire, England; 18 m. n.w. of Newport, about 150 m. w. of London. It stands in a district with extensive iron-works and coal mines, which employ many of the inhabitants.—Pop. (1881) 18,771; (1891) 17,484.

TREDGOLD, *trěd gôld*, **THOMAS**: English writer on architecture and engineering: 1788, Aug. 2—1829, Jan. 28; b. Brandon, Durham. At the age of 14 he was apprenticed to a cabinet-maker; 1808–13 he worked as a journeyman carpenter in Scotland; then removed to London, where 1823 he began business on his own account as civil engineer, having given his leisure from boyhood to the study of architecture and engineering, and later of mathematics, chemistry, mineralogy, and geology. T.'s great works are: *The Elementary Principles of Carpentry: a Treatise on the Pressure of Beams and Timber Frames, the Resistance of Timber, the Construction of Floors, Roofs, Centres, and Bridges* (4to, 2d ed. 1828); and *Strength of Cast Iron* (3d ed. 1831). He wrote other works and many contributions to scientific periodicals.

TREE, n. *trē* [AS. *treow*; Goth. *triw*; Icel. *tré*, a tree, wood: Skr. *dru*, wood, a tree: W. *derw*; Gr. *drus*, an oak]: perennial plant rising to some distance, with a single woody stem bearing a head of branches and twigs; something resembling a tree; a cross; a piece of timber, or something usually made of timber: V. to make to ascend or take refuge in a tree; to place in a difficulty; to form, shape, or stretch on a beam or block of wood called a 'tree.' **TREELESS**, a. *-lēs*, destitute of trees. **TREENAIL**, one of the long wooden bolts used in fastening the planks of a ship to the timbers; one of the bolts which connect layers of masonry. **GENEALOGICAL** or **FAMILY TREE**. a representation of a tree in which the different divisions of a family are exhibited as the branches, and the relation of each family to the common ancestor, as the trunk or stock, shown.

TREE: perennial plant having woody stem and branches, the stem generally single, and bearing a head of branches and twigs; whereas a Shrub (q.v.) generally has a number of stems springing from one root. The terms tree and shrub are not, however, of very exactly defined signification; and many shrubs, under certain circumstances, assume the form of trees, either naturally or by help of art; while trees are, in other circumstances, converted into shrubs: the common hawthorn, e.g. often a mere shrub, sometimes appears as a tree, with stem and head as perfect as the greatest monarch of the forest. The gooseberry bush is trained in British gardens in a tree-like habit, notwithstanding its small size and the shortness of its stem; this, however, is entirely artificial, its natural habit being that of a shrub, to which, but for the gardener's knife, it would almost certainly relapse in a single year. The greater number of trees are exogenous. Palms are almost the only endogenous plants to which the name tree can be given. Very different from the ordinary exogenous trees are the Gymnogens (q.v.) of Lindley—firs, pines, yews, etc. Trees are found in all climates except the coldest; but the number of species, as well as the luxuriance of the forests, is greatest in the tropics. As we advance toward the polar regions, or ascend high mountains, trees first dwindle to shrubs, then to a creeping habit, and finally disappear before other forms of vegetation. Every kind of tree has its peculiar character, not only in foliage, but in general form and mode of branching. It is said that there is much coincidence between the shape of an entire tree and that of its leaves. An ash is as easily distinguished from an elm, by a practiced eye, in winter, when destitute of leaves, as in the full foliage of summer. The ordinary duration of life is various in different species. There are trees in England supposed to be more than a thousand years old, still flourishing. It is to be remembered, however, that biologically only the outer part of trunk and stem is really living, the solid wood being in a state of finished life and of rest, for the most part, and serving only as support; hence a tree may flourish when hollow with decay, like the old Charter Oak of Hartford, Conn., before its wreck by storm. Further, the computation of a tree's years by the number of rings in the wood is not accurate, since periods of drought may increase the number of rings. Oaks and yews are among the trees of longest life. The Baobab of Africa is regarded as a very long-lived tree: see EUCALYPTUS: SEQUOIA.—See ARBORICULTURE.

No acotyledonous plant assumes the character of a tree, except a few ferns, known as Tree-ferns.

TREE-FERN: fern with tree-like woody stem, and a head of fronds resembling leaves of palms. They are found only in some tropical and sub-tropical countries. One species, *Alsophila gigantea*, which has a thick black trunk surmounted by a feathery crown, is found in the Himalaya, at an elevation of 7,000 ft. The soft central part of the stem of *Cyathea medullaris* is an article of food

TREE-FROG.

in New Zealand. Tree-ferns are a characteristic feature of the vegetation of New Zealand.



Tree-fern.

TREE'-FROG, or **TREE'-TOAD**: Batrachian (q v.) of family *Hylidæ*, separated from the true frogs (*Ranidæ*) on account of the dilated disks or suckers at the tips of the toes, which are covered with a viscid secretion, and enable the animals to climb trees. The *Hylidæ* or tree-frogs are of small size, more elegant in form than the true frogs, of brighter colors and more active habits. They feed on insects, which they pursue on the branches and among the leaves of trees or shrubs, stealing toward them, and suddenly springing upon them. They deposit their spawn in water, like other batrachians—some of them on the edges of leaves hanging over water—and hibernate in mud. Their croaking is louder than that of true frogs, and is heard sometimes from the tops of high trees. One species of T.-F. occurs in middle and s. Europe, also in Asia and n. Africa: the warmer regions of the old world have numerous species, and in America they are still more abundant. Some occur in Australia. The T.-F. of Europe (*Hyla arborea*)—*Rainette* of the French—is found chiefly in moist woods, and in hedges near water. Although one of the smallest of European frogs, it can spring more than 3 ft. high to seize an insect. It becomes very noisy on the approach of rain, and is often kept in confinement to serve as a kind of barometer.—The **COMMON TREE-TOAD** or T.-F. (*H. versicolor*) of the e. United States, w. to Kan., is green, gray, or brown, with irregular gray blotches, above;

TREES OF LIBERTY—TREFOIL.

beneath, it is yellow; its loud trills are heard at night, especially in damp weather. Pickering's Tree-toad of the e. states is of yellowish-brown or fawn color, with dark rhombs or lines, the limbs with bars; its length is 1 in., half the size of the preceding. *H. Squirella*, S. C. to Ind., 1½ in., is olive-green and blotched above, with a white line along the jaw to the shoulder. *H. Andersonii*, N. J. to S. C., rare, is pea-green, the sides yellow-spotted, and a purple band from the eye to the arm; size 1½ in. The Swamp Tree-frog (*Chorophilus triseriatus*), 1 in. in length, is bluish-ash, with a dark dorsal stripe from the nose, branching at the middle of the body, but somewhat variable in color. It prefers swampy ground to trees. Its 'rattle has a rising inflection.'

TREES OF LIBERTY, or **LIBERTY TREES**: trees planted in times of political revolution, as the symbol of growing freedom. This symbolical custom was common in some of the Amer. colonies during the revolutionary war; and was imitated and its ceremonial greatly developed in France during the Revolution. The Jacobins in Paris are said to have planted the first tree of liberty 1790; and the custom spread rapidly through the whole of France. In almost every village around these trees crowned with the cap of liberty, the people gathered, dancing, and singing revolutionary songs. Poplars were at first employed; afterward oaks were substituted. This custom was regulated by a decree of the Convention, and diffused over foreign countries by the republican armies. During the Reign of Terror, thousands lost their lives under pretext of having injured a tree of liberty.—During the February revolution of 1848, trees of liberty again came into vogue—generally hung with tri-colored ribbons, circles, and triangles, the symbols of unity and equality, and surmounted with the cap of liberty. Frequently they were consecrated by priests.

TREFLEE, a. *trěflē* [F. *trèfle*, trefoil]: in *her.*, term applied to a cross, the arms of which end in triple leaves, representing trefoils.



Trefoil in Heraldry.



Trefoil in Architecture.

TREFOIL, n. *trěfoyl* [L. *trifolium*, three-leaved grass—from *tres*, three; *folium*, a leaf: F. *trèfle*]: a three-leaved leguminous plant, such as Clover (q.v.), Buckbean (q.v.), Lotus (q.v.), Medic (q.v.), etc.; an architectural ornament resembling the three-leaved clover; in *her.*, a charge representing the clover-leaf, which is always depicted as *slipped*—i.e., furnished with a stalk.

TREGELLES—TREMATODA.

TREGELLES, *tré-gě'llés*, SAMUEL PRIDEAUX, LL.D.: New Testament critic and editor: 1813, Jan. 30—1875, Apr. 24; b. near Falmouth, England; of Quaker family. He joined the Plymouth Brethren (q.v.); and in his latter years became a member of the Church of England. He did not receive a university education, and spent his early life in secular occupation; yet at the age of 25 he had formed the plan of a Greek New Test., on the principles which he afterward carried out. In preparing for his *magnum opus*, he visited the continent in search of MSS.; and, as connected with it, he published, among other works, an ed. of the *Codex Zacynthius*, an *Account of the Printed Text of the Greek New Testament* (1854), and *Introduction to the Textual Criticism of the New Testament* (1856). His *Critical Edition of the Greek New Testament* (1856-72) stands, as to manner of treatment, between that of Lachmann and that of Tischendorf. T. goes further than Tischendorf in his dependence on ancient and rejection of modern MSS. In 1862 T. received a pension of £100, doubled 1870.

TREILLE, n. *trél* [F.]: in *her.*, a lattice; trellis.

TREK, v. *trék* [Dut. *trek*, draught; *trekken*, to draw or pull]: in s. *Africa*, to haul or draw, as a wagon; to travel by ox-wagon; journey from place to place; emigrate; migrate: N. a journey or march. **VOOR-TREKKER**, n. *vór-trék'kér* [Dut. *voor*, before]: a pioneer; an emigrant; a first settler.

TRELLIS, n. *trè'llis* [F. *treillis*, any latticed or grated frame—from *treille*, an arbor or walk covered with vines—from L. *trichila*, an arbor or summer-house: origin doubtful: but comp. L. *trilix*, triple-twilled—from *tres*, three; *licium*, a thread]: a structure or frame of light cross-bars used as a screen or to support plants, etc.: V. to furnish with a lattice or open framework. **TREL'LSING**, imp. **TREL'LISED**, pp. *-list*, furnished with a trellis, or formed as a trellis. **TREILLAGE**, n. *trè'llāj* [F.]: a contexture of light posts and rails used to support Espaliers (q.v.).

TREMANDO, n. ad. *trě-măn'dō* [It., shaking—from L. *tremo*, I shake]: in *music*, a general shake of the whole chord; the term directing it to be done.

TREMATODA, n. plu. *trě-măt'ō-dă* [Gr. *trēma*, an opening or pore, *trēmātos*, of an opening; *eidos*, resemblance]: in *zool.*, an order of intestinal worms comprising the fluke-worm. **TREMATODE**, n. *trě'mă-tōd*, one of the Trematoda or flukes.—*Trematoda* or Trematode Worms constitute, according to Dr. Cobbold's system, the second order of the sub-class *Sterelmintha* (Owen), of the class *Helmintha*. In ordinary zoological classification, the T. form a division of the group of *Platyelmia* or 'flat-worms,' which group is in its turn included in the class *Scolecida*—a division of *Vermes* (see ZOOLOGY). This order, as the Greek word *Trēmātōdes* indicates, is characterized by the possession of suckorial pores or openings. All the animals included in it have soft, roundish, or flat bodies, and their visceral organs are lodged in the parenchyma of the body. Most of the T. are hermaphrodites. They seldom attain

TREMATODA.

large size (greatest length about five inches), but are usually visible to the naked eye. Like all Scolecida, the T. have a peculiar system of vessels ramifying through their bodies—the 'water-vascular' system.

The T. flukes, as they are popularly called, from their resemblance in form to small flukes or flounders, are not parasitic during the whole period of their existence. They perform active and passive migrations from parasitic to non-parasitic abodes; and during their larval wanderings in search of a final resting-place suitable to their adult condition, they provisionally occupy the bodies of different kinds of invertebrata (see Cobbold's *Entozoa*). In *Synopsis of the Distomidæ* (1861), Dr. Cobbold recognizes 344 species of flukes, of which 126 belong to fishes, 47 to reptiles, 108 to birds, 58 to mammals, and 5 to the invertebrata. Afterward he placed the number of species in the order at 400, at the lowest possible estimate: these he divided into the five families *Monostomidæ*, *Distomidæ*, *Tristomidæ*, *Polystomidæ*, and *Gyrodactylæ*—names based, except in the last case, on the number of their pores or oval suckers.

Van Beneden arranges these families into (a) *Monogenea* and (b) *Digenea*, the development in the former being simple, while in the latter there is an alternation of generation, the nurses and larvæ living chiefly in mollusks, while the adult animals live chiefly in the bodies of vertebrate animals. The *Monostomidæ* and *Distomidæ* belong to the latter, and the others to the former group. The family of *Distomidæ* comprises the principal and best-known genera of the order *Trematoda*, and its members are at once recognized by the presence of two pores or suckers—one, the anterior, connected with the mouth; the other, termed the acetabulum, usually on the ventral surface, in the middle line.

The following members of this order are of special interest, as very liable to infest man. *Fasciola hepatica* (see FLUKE) is not only common in all varieties of grazing-cattle, especially sheep, but has been found in the horse and ass, in the hare and rabbit, in the squirrel, beaver, kangaroo, etc., and is occasionally found in man, not only in the liver and gall-bladder, but beneath the skin in various parts, e.g., in the sole of the foot, behind the ear, and in the scalp: see ROR. *Distoma lanceolatum* is a species frequent in the sheep and ox, and has been found (infrequently) in the human subject. *Distoma ophthalmobium* has been occasionally found in the lens of the human eye. *Distoma hæmatobium* (*Bilharzia hæmatobia* of Cobbold) is the only known trematode not hermaphroditic.

The male is a cylindrical worm, only about half an inch in length; while the female is filiform, longer and much narrower than the male, being about $\frac{4}{5}$ of an inch in length. The first specimens were found by Bilharz of Cairo in the portal system, and the worm has since been found in the veins of the mesentery, bladder, and other parts. This parasite is common along the borders of the Nile, in s. Africa and the Mauritius. It is so common in

TREMBLE—TREMOLO.

Egypt that, in 363 examinations of the body after death, Griesinger found it no less than 117 times.

The principal feature of the disease caused by this worm consists in a general disturbance of the uropoietic function. Diarrhea and hematuria occur in advanced stages of the complaint, being frequently associated also with the so-called Egyptian chlorosis, colicky pains, anæmia, and great prostration of the vital powers. The true source of the disorder, however, is easily overlooked unless careful microscopical examination be made of the urine and other evacuations. If blood be mixed with these, and there be also a large escape of mucus, a minute inspection of the excreta will scarcely fail to reveal the characteristic ova of *Bilharzia*.—Other trematodes are occasionally found in the human subject.

TREMBLE, v. *trēm'bl* [F. *trembler*; It. *tremolare*, to tremble, to shake—from mid. L. *tremulārē*, to tremble—from L. *trēmūlus*, shaking; *trēmērē*, to shake]: to shake with fear, cold, or weakness; to quiver; to shiver; to shake, as the voice: N. the act or state of trembling, as, in a *tremble*. **TREM'BLING**, imp. *-blīng*: N. the act or state of shaking, as from fear, cold, etc. **TREMBLED**, pp. *trēm'bld*. **TREM'BLER**, n. *-blēr*, one who trembles. **TREM'BLINGLY**, ad. *-lī*. **TREMBLING-POPLAR**, the aspen-tree. **TREMBLORES**, n. plu. *trēm-blō'rēz*, the name given by the Sp. settlers of S. Amer. to the 'surface-tremors,' which in some volcanic districts are almost of daily occurrence.

TREMELLA, *trē-mē'lla*: genus of fungi, of the division *Hymenomycetes*, soft and gelatinous, of no very determinate form, growing mostly on decaying wood. In some places in Britain they receive such names as Witches' Meat and Witches' Butter. Superstitious notions have been connected with them, and imaginary medicinal value has been ascribed to them.

TREMELLOID, a. *trēm'ēl-loyd* [Gr. *trēm'ō*, I tremble; *eidos*, resemblance]: in *bot.*, jelly-like in substance or appearance; resembling a fungus of the genus *Tremella*.

TREMENDOUS, a. *trēm'nē'dūs* [L. *tremen'dus*, fearful, dreadful—from *trēmo*, I tremble]: sufficient to excite fear or terror; dreadful; terrible; hence, extremely violent or great; wonderful; astounding. **TREMEN'DOUSLY**, ad. *-lī*. **TREMEN'DOUSNESS**, n. *-nēs*, the state or quality of being tremendous.—**SYN.** of 'tremendous': dreadful; fearful; frightful; terrible; horrible; awful; terrific.

TREMOLITE, n. *trēm'ō-līt* [from *Tremola*, a valley of Switzerland, where first found]: a variety or sub-species of Hornblende (q.v.), occurring in large prismatic crystals, pearly and semi-transparent; it is composed of silica, magnesia, lime, and a very little fluoric acid.

TREMOLO, n. ad. *trēm'ō-lō* [It., trembling—from L. *trēmūlus*, shaking (see **TREMBLE**)]: in *music*, a term indicating that a note or chord is to be so played as to produce a tremulous effect. In singing, a T. effect is advantageous on rare occasions, but is often a resort of inferior singers to conceal defective tone or style. T. is also the name of a stop in an organ by which this T. effect is produced.

TREMÓR, n. *trēm'ōr* or *trē'mōr* [L. *tremor*, a shaking—from *tremēre*, to tremble: It. *tremore*]: a shivering or shaking; a quivering or vibratory motion.

TREMULOUS, a. *trēm'ū-lūs* [L. *trēmūlus*, shaking, trembling (see TREMBLE): Sp. *tremulo*]: affected with fear or timidity; shaking; vibratory; quivering. **TREM'ULOUSLY**, ad. *-lī*. **TREM'ULOUSNESS**, n. *-nēs*, the state of being tremulous or quivering.

TRE'NAIL: see **TREENAIL**.

TRENCH, n. *trēnch* [Prov. *trençar*, to cut off: It. *trinciare*; F. *trancher*, to cut off or to pieces: Sp. *trincar*, to break: origin doubtful—perhaps L. *truncāre*, to maim, to cut off]: a narrow cut or ditch excavated in the earth; in *mīl.*, a deep ditch cut for defense, or for the shelter of besieging troops as they approach the works they desire to take; the wall or breastwork formed by the earth thrown out of the ditch (see SIEGE): V. to cut; to furrow deeply with the spade or plow; to dig a ditch in; to fortify or defend with trenches and earthen breastworks; to encroach upon. **TRENCH'ING**, imp.: N. the act of cutting into narrow ditches; the preparation of soils by deep cutting and exposure. **TRENCHED**, pp. *trēncht*: **ADJ.** furrowed or cut deep. **TRENCH'ER**, n. *-ēr*, one who trenches; a wooden plate on which meat may be cut or carved; that which the trencher contains; food; a trencher-cap. **TRENCHER-CAP**, a square cap worn by professors and students at some universities; a 'mortar-board' cap. **TRENCHER-FRIEND**, in *OE.*, a parasite. **TRENCHER-MAN**, a feeder; a great eater. **TRENCH-PLOW**, a plow that turns up land to a greater depth than that effected by the ordinary plow. **TRENCHANT**, a. *trēnch'ānt* [OF. *trenchant*, cutting—from *trencher*, to cut]: cutting; sharp; severe. **TO OPEN THE TRENCHES**, to begin the siege of a fortified place.

TRENCH, *trēnch*, **RICHARD CHENEVIX**, Archbishop of Dublin: clergyman, poet, and scholar of the Church of England: 1807, Sep. 9—1886, Mar. 28; b. Dublin; of an Anglo-Irish family of Galway, the Trenches of Woodlawn. He was educated at Harrow and at Trinity College, Cambridge, where he graduated 1829. After travelling a few years he became a country curate; and 1835–46 he published six vols. of poetry, favorably received, and reissued in *Poems Collected and Arranged Anew* (1865); the first of them was *The Story of Justin Martyr*. In 1845 T. was presented to the rectory of Itchin Stoke; 1847 he became theol. prof. in King's College, London; 1856, dean of Westminster; 1864, abp. of Dublin, which office he resigned 1884.—T.'s poetry was marked by sensibility and refinement, but not by genius. His theological writings laid his contemporaries under deep debt of gratitude, not so much for their originality or critical insight as for their treasures of erudite illustration admirably selected to convey most valuable information in most desirable form. T.'s *Notes on the Miracles* (1846) and *Notes on the Parables* (1841; 13th ed. 1880) have had immense circulation. In the field of philology, while his interest was not in scien-

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tific problems for their own sake, he took pains to secure accuracy in his facts, and fascinated his readers with the fossil poetry and fossil history imbedded in language.' In this field, his charming little works, *Study of Words* (1851, more than 20 editions in the United States in the first ten years), *English Past and Present* (1855, many eds.), *Select Glossary of English Words* (1859, many eds.), have popularized historical study of the Eng. tongue—giving an impulse also to philological science. His principal works beside those above noted are: *The Lessons in Proverbs* (1853); *Studies on the Gospels* (4th ed. 1878); *Hulsean Lectures* (1845; 5th ed. 1880); *The Sermon on the Mount illustrated from St. Augustine* (1844); *Sacred Latin Poetry* (1849); *St. Augustine as an Interpreter of Scripture* (1851); *Synonymes of the New Testament* (1854); *The Epistles to the Seven Churches of Asia Minor*; *An Essay on the Life and Genius of Calderon*; *Deficiencies in Our English Dictionaries*; and *Lectures on Medieval Church History* (1878).

TRENCHARD, *trēnch'ərd*. **STEPHEN DECATUR**: 1818, July 10—1883, Nov. 15; b. Brooklyn: naval officer. He was appointed midshipman in the U. S. navy 1834; promoted passed midshipman 1840, lieutenant 1847, commander 1862, capt. 1866, commodore 1871, and rear-admiral 1875; and was retired 1880. He was on coast-survey duty 1845-6 and 1853-57; was presented by Queen Victoria with a sword and by the underwriters with a watch for rescuing the English bark *Adieu* and saving the cargo and all hands; and was on the *Powhattan* during her diplomatic cruise to China and Japan 1857-60. He distinguished himself in the civil war; and 1876, as commander of the n. Atlantic squadron, had 21 vessels under his charge, the largest individual fleet since the war.

TRENCK, *trēnk*, **FRANZ**; and **FREDERICK VON DER**: two German barons and soldiers, of ancient E. Prussian family; cousins; whose adventures, recorded in autobiographies, have given them wide fame. Both were men of great physical strength; both blended in their character the hero and the braggart; both were subject to fits of uncontrollable passion; and both told premeditated lies.

Baron **FRANZ VON DER T.**: 1711, Jan.—1749, Oct.; b. Reggio, in Calabria, where his father was an Austrian general. At the age of 17 he received a commission as a cavalry officer, fought duels, and cut off the head of a man who refused to lend him money. He fled to Russia, where he was made a capt. of hussars. He was then a young giant 6 ft. 3 in. high; and it is probable that he knocked down his commanding officer, as he says he did, for rebuking him. He adds that he was placed under arrest while an engagement was going on; that, Marshal Münnich happening to pass, he called out that if set free and pardoned he would bring back three 'Turks' heads in an hour; that he was set free, and brought back four 'Turks' heads suspended from his saddle. This story may or may not be true; but certain it is that he was cashiered not long afterward, and returned to settle on his estates in Croatia. There first his career becomes historical. The Turkish

frontier was overrun with banditti. T. armed and drilled 1,000 of his tenants, whom he called Pandours, and by their means succeeded in restoring order. He then offered the services of his regt. to Maria Theresa, and his aid was accepted. In 1740 he took part in the Silesian war at the head of his men, and perpetrated atrocious deeds of rapine and cruelty. There had been no such monster, says Carlyle, since Attila and Genghis. He attacked Cham, a fine trading-town in neutral territory, 1742, Sep. 7—an act in defiance of all law and discipline—and completely annihilated it. After the battle of Sohr, 1745, Sep., he offered to capture Frederick the Great, and bring him a prisoner to the Austrian camp. He failed in the enterprise, with great loss of men; but he secured the king's tent and much valuable booty. Suspicious were, however, entertained of his having been bribed to release the king; and he was tried by court-martial. He was imprisoned at Vienna, but escaped with assistance of Baroness Lestock, who bribed the jailers to allow him to be conveyed in a coffin, as if dead, beyond the city walls; was again captured at Bruges, and imprisoned at Grätz, where he took poison, and died.—See Carlyle's *Life of Frederick the Great*; and *Mémoires du Baron Franz de Trenck* (Par. 1787), written by himself.

Freiherr FREDERICK VON DER T.: 1726, Feb. 16—1794, July 25; b. Königsberg; son of a major-gen. in the Prussian service. He distinguished himself at the university. At the age of 16 he became a cornet in the guards; and, two years afterward, Princess Amalie, who saw him at a ball, we are told, conceived a violent passion for him. To this he attributed the king's subsequent antipathy toward him. There was, however, a much better reason: he was detected in a correspondence with his Austrian cousin, not long before the attempt to capture the king, and was arrested. 1746, Dec., he escaped; went to Vienna, where he fought several duels; then took a command in the Russian service. At the end of the war, the empress gave him a diamond-hilted sword, and a Russian princess bequeathed to him her fortune. Venturing to revisit Germany, he was arrested and imprisoned in the fortress of Magdeburg, where 'his efforts to escape secured him the honor of a specially constructed cell, a heavy burden of chains, and the additional punishment of being roused every quarter of an hour by the sentries.' Carlyle shows that T. had been in prison three months, and was there when the battle of Sohr took place, though he vividly describes his own adventures in the fight. He was accused of this lie in his own time, and admitted that he must have made a mistake: 'He had nothing but his poor, agitated memory to trust to.' He was released 1763, Dec. 24, through the efforts of Princess Amalie, who had not ceased to befriend him, and afterward settled at Aix-la-Chapelle, where he married the burgomaster's daughter, and went into business as a wine-merchant. He published his *Memoirs* in 1787: the book was translated into many languages, and T. became the most famous personage of his time. The ladies at Paris, Berlin, and Vienna wore bonnets, dresses, and rings à la

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Trenck; and no less than seven plays founded on his adventures were brought out on the French stage; though Carlyle found reason in the Memoirs to characterize T. as 'an extensively famous blockhead.' His praise of the French Revolution brought him into serious trouble in Austria; and he went to Paris 1792 as a zealous adherent of the Mountain party; but there he was suspected as an emissary of Prussia, and was thrown into prison, where rumors among the prisoners, that the Prussians were advancing on Paris, and carrying all before them, were traced to T., who was in consequence condemned, and dragged to the guillotine. On the scaffold, although 69 years of age, he manifested the ungovernable passion which had characterized him through life. He harangued the mob; and at length the executioner had by force to hold his head by the gray hair on the block, to meet the fatal stroke.—See Chambers's *Book of Days*, I. 260; Carlyle's *Frederick the Great*, IV.; *Friedrich Trenck's Merkwürdige Lebensgeschichte von ihm selbst beschrieben* (2 vols. Berl. 1787); and *Leben und Thäten der Trencke*, by Watermann (2 vols. Leip. 1837).

TREND, v. *trënd* [Fris. *trund*; Dan. and Sw. *trind*, round; AS. *trendel*, a circle]: to have a general course or direction, as a coast-line; to stretch; incline; run: N. inclination in a particular direction. TREND'ING, imp.: N. general course or direction; tendency. TREND'ED, pp.

TRENDELENBURG, *trën'dêh-lên-bûrch*, FRIEDRICH ADOLF: philosopher: 1802, Nov. 30—1872, Jan. 24; b. near Lübeck, Germany. He studied at the universities of Kiel, Leipzig, and Berlin, giving his studies chiefly to the anc. classic writers and to classical philology. He early came under the influence of Schelling's school in philosophy. His doctorate dissertation (1826) was an attempt to define Plato's philosophy with the aid of Aristotle's criticism: *Platonis de Ideis et Numeris Doctrina ex Aristotele Illustrata*. He gave 7 years (1826–33) to preparing a critical ed. of Aristotle's treatise *De Anima*. T. became prof. extraordinary in Berlin 1833, and was ordinary prof. from 1837 till his death. He was a remarkably successful teacher, treating in turn all the usual philosophical systems and doctrines, and at the same time conducting classes for study of Aristotle for advanced students. T.'s philosophy was that of idealism in the ancient or Platonic sense.—He wrote *Elementa Logices Aristotelicæ*; *Logische Untersuchungen* (an important factor in discrediting the Hegelian philosophy); *Die logische Frage*; *Naturrecht auf dem Grunde der Ethik*.

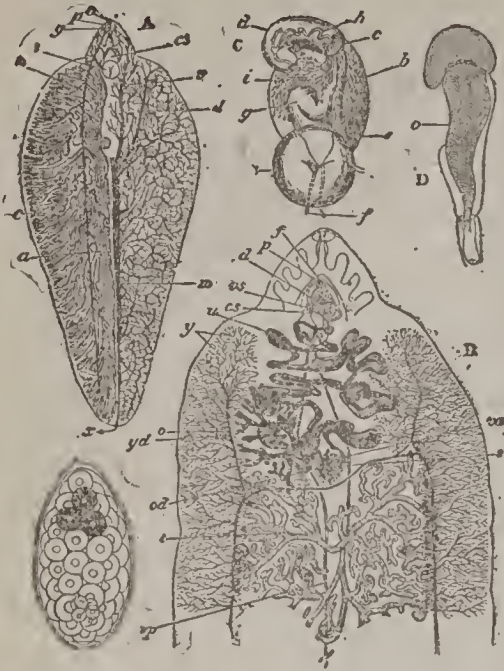
TRENT, *trënt*: river of the midland counties of England, rising on the n.w. border of Staffordshire, about 10 m. n. of Burslem, about 600 ft. above sea-level. It flows first s.e. to the border of Derbyshire, and thence generally n.e. through the counties of Derby, Nottingham, and Lincoln, till it unites with the Ouse (q.v.) to form the Humber (q.v.). It receives the Derwent, Idle, and Tarn from the w., and the Soar from the s.; its length is 170 m., being navigable for barges 130 m., up to Burton-on-Trent,

TRENT.

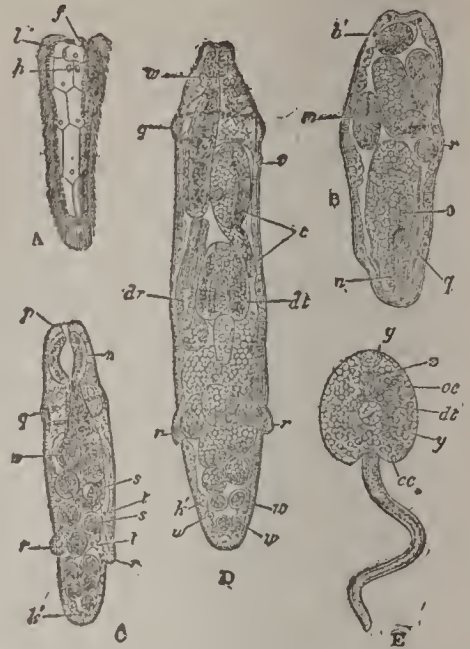
TRENT (It. *Trento*, Ger. *Trien*!, L. *Tridentum*): walled town of Austria, in the southern Tyrol, cap. of the circle of T.; 60 m. above Verona; on the left bank of the Adige (here spanned by a wooden bridge 146 ft. long), in a beautiful and fertile valley, surrounded by high limestone hills. In its general aspect and architecture, T. is Italian; and with its spires and towers, ruined castles and ancient embattled walls, it presents an imposing appearance from a distance. The *Piazza Grande*, near the cathedral, is adorned with a splendid fountain of red marble, surmounted by a colossal statue of Neptune with his trident. The cathedral, begun 1212, is a beautiful specimen of the Romanesque style of Lombardy, with a few features suggestive of the contemporary German style; united to it is a fragment of the episcopal palace of the 12th c. The church of Santa Maria Maggiore is on the site of the council-chamber in which the famous 'Council of Trent' held its sittings. Among other public buildings are the church of the Jesuits, ornamented with the richest foreign marble; the New Theatre (holding 1,400 people); the town-hall; and the Palazzo Buonconsiglio, adjoining the town, a noble specimen of the feudal architecture of n. Italy, now occupied as a barrack. T. has manufactures of silks, wine, pottery, spirits, cloth, and sugar; and has large transit-trade. The inhabitants are Italian in language and habits; and the restoration to Italy of T. and the *Trentino* (dist. of T.) has been, with that of Trieste, the chief aim of the *Italia Irredenta* agitation in Italy (see IRREPRESENTIST).—Pop. (1880) 19,585; (1900) 24,000.

The ancient *Tridentum*, or *Tridente*, derived its name from the *Tridentini*, Alpine tribe, whose cap. it was. Conrad the Salic bestowed on the prince-bishops of T. the temporal rule of the valley of the Adige, and under them T. rose to great prosperity. It is still the see of a prince-bishop.

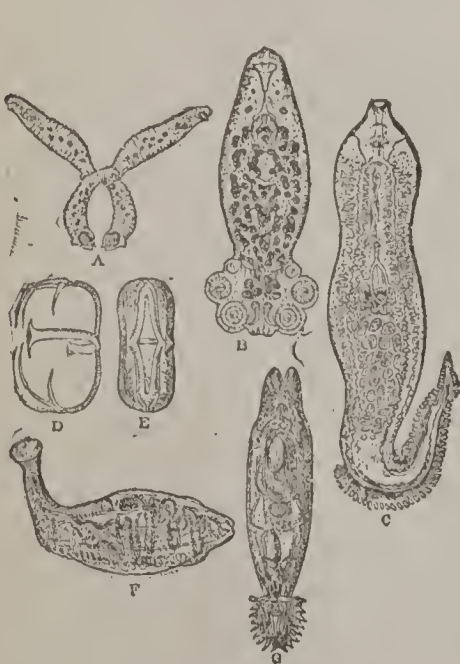
TRENT, COUNCIL OF: in *eccles. hist.*, famous council of the Rom. Cath. Chh., assembled at Trent (q.v.) by Pope Paul III. 1545, and continued in 25 sessions under Julius III. and Pius IV. until its close 1563. The Council of Trent was the most important of post-mediæval times; and is perhaps the most celebrated of the assemblies regarded by the Rom. Cath. Church as ecumenical or general, and the great repository of all the doctrinal judgments of that communion on the chief points at issue with the Reformers of the 16th c. It marks the modern dividing-line between Roman Catholicism and Protestantism. Very early in Luther's conflict with Pope Leo X., he had appealed from the pope to a general council; and after the failure of the first attempts at adjustment of the controversies, a general desire grew up in the church for the convocation of a general council, in which the true sense of the church on the questions at issue might be finally and decretorially settled. Another, and, to many, a still more pressing motive for desiring a council, was the wish to bring about the reform of the alleged abuses as well of the court of Rome as of the domestic discipline and government of national and



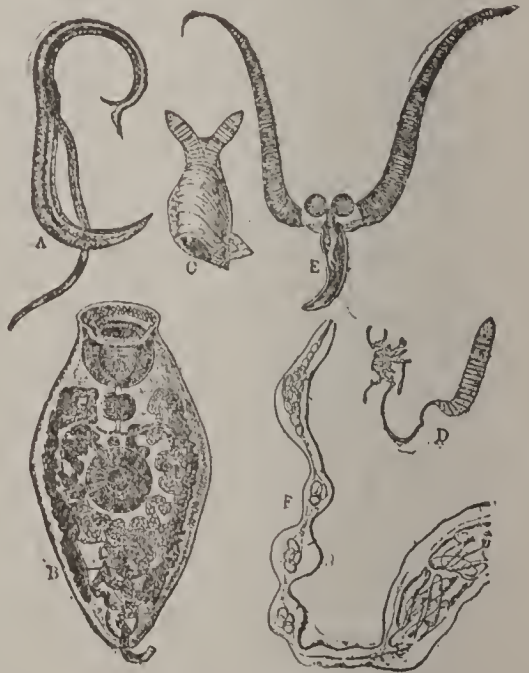
Fasciola hepatica: a, ventral surface; b, anterior portion, more highly magnified.



Various Stages of Development of *Fasciola hepatica*.



Diplozoon paradoxum.



Bilharzia hæmatobia.

Various Forms of Trematoda.

provincial churches, to which the movement of the Reformers was in part at least ascribed. But the measures for convoking a council were long delayed, owing partly, it has been alleged, to the intrigues of the party interested in maintaining those profitable abuses, and especially of the officials of the Roman court, including the cardinals, and even the popes themselves; but partly also to the jealousies, and even the actual conflicts, between Charles V. and the king of France, whose joint action was indispensable to the success of any such ecclesiastical assembly. It was not till the pontificate of Paul III. (1534-49) that the design assumed practical character. One of the great difficulties regarded the place of meeting, in discussing which much time was lost; so that the assembly did not actually meet till 1545, Dec. 13, its first session being merely a formal initiative. At its next session, 1546, Jan. 7, only about 25 abps. and bps., 5 generals of religious orders, and the ambassadors of Ferdinand I., King of the Romans (afterward emperor of Germany), assembled at Trent. The number of prelates afterward increased. The pope was represented by three legates presiding in his name—Cardinals Del Monte, Cervino, and Pole. The first three sessions were given to preliminaries. It was not till the fourth session, 1546, Apr., that the important work of the council began. It was decided, after much disputation, that the doctrinal questions and the questions of reformation should both be proceeded with simultaneously. Accordingly, the discussions on both subjects were continued through the fourth, fifth, sixth, and seventh sessions, in all which matters of great moment were decided, when a division between the pope and the emperor (then Charles V.) who, by the victory of Mühlberg, had become all-powerful in the empire, made the pope desirous to transfer the council to some place beyond the reach of Charles's arbitrary dictation. The appearance of the plague at Trent furnished a ground for removal, and in the eighth session a decree was passed, 1547, Mar. 11, transferring the council to Bologna.

This transfer was opposed by those bishops who were in the imperial interest; and the division which ensued had the effect of suspending all practical action. Meanwhile, Paul III. died. Julius III., who had, as Cardinal Del Monte, presided as legate in the council, took measures for its resumption at Trent, where it again assembled 1551, May 1. The sessions 9th—12th, partly at Bologna, partly at Trent, were spent in discussions regarding the suspension and removal; but in the 13th session the real work of the assembly was renewed, and was continued, slowly, but with great care, till the 16th session, when, on account of the apprehended insecurity of Trent, the passes of the Tyrol having fallen into the hands of Maurice of Saxony, the sittings were again suspended for two years.

But the suspension was destined to continue no less than nine years. Julius III. died 1555, and was followed rapidly to the grave by his successor (who had also been his fellow-legate in the council as Cardinal Cervino), Mar-

cellus II. The pontificate of Paul IV. (1555-59) was a very troubled one, because of internal difficulties and of the abdication of Charles V.; nor was it till the accession of Pius IV. (1559-65) that the council was again brought together to the number of 102, under the presidency of Cardinal Gonzaga, reopening their deliberations with the 17th session. All the succeeding sessions were devoted to matters of the highest importance—communion under one kind; the sacrifice of the mass; the sacrament of orders, and the nature and origin of the grades of the hierarchy; marriage, and the many questions connected therewith. These grave discussions occupied the sessions 17th—24th, till 1563, Nov. 11. Much anxiety was expressed by many bishops to bring the council to a conclusion, that they might be enabled to return to their sees in a time so critical: accordingly, as the preliminary discussions regarding most of the remaining questions had already taken place, decrees were prepared in special congregations comprising almost all the remaining subjects of controversy, such as purgatory, invocation of saints, images, relics, and indulgences. Several other matters, rather of detail than of doctrinal principle, were referred to the pope, to be by him examined and arranged; and 1563, Dec. 3, 4, these important decrees were finally read, approved, and subscribed by the members of the assembly, consisting of 4 cardinal legates, 2 other cardinals, 25 abps., 168 bps., 7 abbots, 7 generals of orders, and 39 proxies of bishops—besides the ambassadors still remaining at Trent.

These decrees were confirmed 1564, Jan. 10, by Pius IV., who had drawn up—based on them in conjunction with the creeds previously in use—a profession of faith known under his name: see ROMAN CATHOLIC CHURCH. The *doctrinal* decrees of the council were received at once throughout the Western Church—a fact which it is necessary to note, as the question as to the reception of the decrees of doctrine has sometimes been confounded with that regarding the decrees of reformation or discipline. As to the latter, delays and reservations took place. The first country to receive the decrees of the council as a whole was the republic of Venice. France accepted the disciplinary decrees only piecemeal and at intervals.

It would be out of place here to enter into the question as to the merits of this unquestionably great and momentous assembly, which may be said to have practically decided the religious development of the Western Church. It is viewed with directly opposite impressions by opposing critics, and it is commonly even said that in the Rom. Cath. Church itself the Council of Trent has met its worst adversary in the person of one of the priests of its own creed, the Servite monk Fra Paolo Sarpi (see SARPI, PIETRO). Sarpi, however, cannot fairly be regarded a Rom. Catholic. His sympathies are strongly anti-Roman, and his history of the council shows a rationalizing tendency, which gives him place among the advocates of that free inquiry which it was the object of Trent to repress by authoritative judgment pronounced once for all, and ex-

cluding all controversy. And though there are perhaps equal exceptions against the impartiality of his rival historian and antagonist, Pallavicino, the latter is admitted by Ranke, Raumer, and others to show less bias than Sarpi in the use of documents, at least in some special departments of the investigation. It must be said, however, that, for the purpose of an expression of the mind of the universal church, the council was too largely Italian to be free. The nationality of the bishops present in the later sessions was as follows: Italians 189, Spaniards 31, French 26, Greeks (titular) 6, Portuguese 3, Illyrians 3, Irish 3, Germans 2, Flemish 2, Polish 2, Croatian 1, Moravian 1, English 1. The effect of the council was more than to restate the pre-Reformation Rom. Cath. theology; it opened a new era in doctrine, closing many questions on which liberty had previously been allowed. In disciplinary reform it accomplished some useful results.

The canons and decrees of the Council of Trent were issued in Latin, and have been reprinted innumerable times. They have been translated into almost every modern language; the best ed. being that of Richter and Schulte (1853), and the most approved Eng. translation being that of the Rev. Jeremiah O'Donovan. One of the supplementary works assigned to the pope by the council at its close was the completion of a catechism for use of parish priests and preachers. This work has not all the authority of the council, but it is of the very highest credit, and is extensively used, having, like the canons and decrees, been very generally translated. A similar work was the publication of an authentic ed. of the Vulgate version of the Bible, as well as of the Missal and Breviary. All these have been accomplished at intervals; and there is besides at Rome a permanent tribunal, a congregation of cardinals, styled *Congregatio Interpres Concilii Tridentini*, to which belongs the duty of dealing with all questions which arise as to the meaning, the authority, or the effect of the canons and decrees of this celebrated council.—See SARPI: PIUS IV: PALLAVICINO.

TRENTAL, *n.* *trén'tál* [*F.* *trente*; *It.* *trenta*, thirty—from *L.* *triginta*, thirty]: a collection or series of thirty: specifically, in the *Rom. Cath. Chh.*, an office for the dead consisting of thirty masses, recited for thirty days in succession after the person's death.

TRENTON, *trén'ton*: city, cap. of Grundy co., Mo.; on Grand river, and on the Chicago Rock Island and Pacific and the Missouri and Pacific railroads; 100 m. from St. Joseph. It is in an agricultural country; with coal and hickory, white, red, and black oak, black walnut, elm, and hard and soft maple near; and has a coal mine and the machine and car shops of the Chicago Rock Island and Pacific railroad. Stock-raising is profitably carried on in its vicinity, and lumbering has become an important industry. The city has a water-system with a daily capacity of 2,000,000 gallons; gas and electric light plants; 6 churches; 1 national bank (cap. \$75,000) and 1 state

TRENTON.

bank; one of the finest public school buildings in n. Mo.; public natural park of 20 acres: 3 flour-mills: opera house; and 3 daily and 4 weekly newspapers.—Pop (1880) 3,370; (1890) 5,039; (1900) 5,396.

TRENTON: city, cap. of Mercer co. and of the state of N. J.; on the Delaware river at the head of steamboat navigation, and on the Delaware and Raritan canal and the Assanpink creek; and on the Pennsylvania, the Philadelphia and Reading, and branches of the Baltimore and Ohio and the Delaware Lackawanna and Western railroads; 33 m. n.e. of Philadelphia, 57 m. s.w. of New York. It is noted for its associations with the revolutionary war and early history of the federal govt., and for its large manufacturing interests. It has a healthful site; has excellent surface drainage and an improved sewage system; is supplied with water from the river by a system owned by the city, which cost \$530,385 and is now valued at \$1,000,000, and has many m. of pipe; is lighted by electricity, gas, and naphtha; has about 100 m. of streets; and contains 8 large and many smaller hotels. In 1902 the net public debt was \$1,827,164; assessed valuation of real property \$28,495,422; personal \$6,835,167; tax-rate \$2.20 on \$100. There were (1890) 26 school buildings (of which the city owned 18), valued with furniture and apparatus at \$349,133; class-rooms 26, teachers 139, seating capacity 6,935, enrolment 5,736, public-school enumeration 14,302. In 8 of the schools there were general, and in 9 professional libraries, the latter chiefly for teachers. The Rom. Cath. Church had the Sacred Heart Acad., with 70 pupils, and 5 parochial schools, with 1,796 pupils. Other educational institutions were the State Normal School, State Model School, State Industrial School for Girls, State School for Deaf Mutes, business colleges, and several private, art, and music schools. Besides the public-school libraries, there were the state library in the capitol, a public library, and a library under direction of the Woman's Christian Temperance Union. The publications included 4 daily, 1 tri-weekly, 8 weekly, and 2 monthly periodicals. There were 44 churches—viz, Meth. Episc. 11; Presb. 7; Bapt. 6; Rom. Cath. 6; Prot. Episc. 5; Friends 2; and Christian Lutheran, German Lutheran, Hebrew, Polish Hebrew, Evang. Assoc., Messiah Chapel, and Evang. German, each 1. T. is the seat of a Prot. Episc. and a Rom. Cath. bishop.

T. has 3 national banks (cap. \$1,250,000, surp. \$650,000). 1 state bank (cap. \$500,000), 1 savings bank (surplus \$301,637), and 2 private banks. The notable buildings included the U. S. Court-house and Post-office; State-house, remodelled and rebuilt after partial destruction by fire, and completed 1889; Co. Court-house; State Arsenal; State Penitentiary; State Lunatic Asylum; City Hall; Alms-house; Union Industrial Home; Library Hall; Taylor Opera-house; Masonic Hall; Temperance Hall; St. Francis's Hospital; City Hospital; and Public High School. The public monuments of special note are the 'Swamp Angel,' an 8-inch Parrott rifle, the first gun fired

TRENTON.

from Morris Island, S. C., into Charleston 1863, Aug. 21, mounted on a stone pedestal; a 46-ft. monument to George B. McClellan; the statue of Washington (exhibited in the Italian section of the Centennial Exhibition); and a \$60,000 monument (the corner-stone of which was laid 1891, Dec. 26) erected by government, state, and private aid, in commemoration of the revolutionary battle of Trenton. The city has 2 horse-car and 2 cab companies. There are also a public park of 100 acres, public square, and attractive grounds around the public buildings; and a boulevard or river-drive of 5 m. along the Delaware has been begun.

T. owes its prosperity largely to the variety and extent of its manufactures. In 1880 it had 386 manufacturing establishments, which had \$4,444,130 capital and 6,740 hands, paid \$2,406,906 wages and \$5,377,254 materials, and yielded products valued at \$9,319,453. The most noted industry is the manufacture of pottery goods. In 1882, out of 55 white-ware potteries, with 244 kilns, in the United States, T. had 23 potteries, with 118 kilns, and it manufactures fully one-half of all the china and crockery produced in the country. The next industry in importance is the manufacture of steel wire. The great cables for the New York and Brooklyn Bridge were made at the Roebling works in T. Rubber, terra cotta, brick, and tile also are leading articles of manufacture. In 1900 T. reported 570 manufacturing establishments, employing \$26,174,895 capital and 14,457 persons, paying \$6,791,026 for wages and \$18,059,504 for materials used, and yielding products valued at \$31,645,695. The chief industries were the manufacture of pottery goods and of iron and steel. Trade and commerce are facilitated by 41 daily trains to New York and 51 to Philadelphia, by daily steamboat communication with Philadelphia, and by large canal advantages.

T. was partially settled 1676, and permanently 1680, and is supposed to have been named after William Trent, first chief-justice of the state. T. was the scene of two movements in the revolutionary war which did much to restore the waning ardor of the American troops and give renewed hope to patriots. After the disasters at Brooklyn and White Plains, Washington retreated into N. J., where a Hessian force pursued him across the state to the Delaware river. Washington led his army across the river 1776, Dec. 8, and on the morning of the 26th suddenly recrossed the ice-choked stream, and surprised and routed the Hessians. He again crossed the river to perfect defensive plans; and 1777, Jan. 1, returned to T. On the following day he attacked Cornwallis on the n. side of the city, and closed the engagement in the evening at the Assanpink Bridge, having baffled, if not actually defeated, the British.—The continental congress was assembled in T. 1784, Nov. 1—Dec. 24; Washington was given a grand reception at the Assanpink Bridge 1789; the town was made the cap. of the state 1790, and given a city charter 1792; was the seat of the federal govt. during the yellow-fever epidemic in Philadelphia 1793; and was the home of

TRENTON FALLS—TREPHINING.

Pres. John Adams 1798. The villages of Millham and Chambersburg were annexed to the city 1886, May 1.—Pop. (1880) 29,910; (1890) 57,458; (1900) 73,307.

TRENTON FALLS: series of cascades in West Canada creek, tributary of the Mohawk river, in Oneida co., N. Y., near Utica. There are five principal falls—named, successively, in passing up the stream, Sherman, High, Mill-dam, Alhambra, and Rocky Heart. The water descends 312 ft. in 2 m., through a chasm in limestone rock 70–200 ft. deep. The locality is one of rare beauty and large geological interest, and is a popular summer resort, with ample accommodations for transient and season guests in and near the little village which is named from the falls.

TRENTON-LIMESTONE, n. *trén'ton*- [from a township of that name in N. Y., where found]: limestone of Lower Silurian age—divided into the Hudson River group, the Utica group, and the Trenton group.

TREPAN, n. *trě-păn'* [F. *trépan*; Sp. *trepano*, an auger: It. *trapano*, an auger, a trepan—from Gr. *trupănōn*, an auger, a trepan—from *trupa*, a hole]: in *surg.*, a circular saw for removing a portion of the skull (see **TREPHINE**): V. in *surg.*, to perforate the skull and take out a piece for the purpose of relieving the brain from pressure. **TREPAN'NING**, imp.: N. the operation of making an opening in the skull to relieve the brain from compression or irritation; Trephining (q.v.). **TREPANNED'**, pp. *-pănd'*.

TREPAN, v. *trě-păn'* [AS. *treppe*, a trap; *treppan*, to ensnare: OF. *trappan*, a snare or trap for animals]: to lay a trap for; to ensnare; to take by stratagem: N. a snare; a cheat; a deceiver. **TREPAN'NING**, imp. **TREPANNED'**, pp. *-pănd'*. **TREPAN'NER**, n. *-nēr*, one who trepans. Also spelled **TRAPAN**.

TREPANG, n. *trě-păng'* [Malay name]: an esteemed edible sea-slug or holothurian found in the Indian Ocean; also called sea-cucumber, and by the French *bêche-de-mer* = spade of the sea (see **BECHE-DE-MER**).

TREPHINE, n. *trě-fîn'* [from **TREPAN** 1]: an improved form of the trepan; a small cylindrical or circular saw with a centre-pin on which it works: V. to perforate with a trephine. **TREPHI'NING**, imp.: N. the act or operation. **TREPHINED'**, pp. *-fînd'*.

TREPHIN'ING: the opening through a bone, especially the skull, by surgical operation. Not only the Trephine (q.v.), but various forms of saws, mallet and chisel, bone forceps, elevator, etc., are employed. Prehistoric remains have been found in which the skull has been trephined, probably as a religious rite and almost certainly by the use of stone implements. Trephining, other than of the skull, is seldom resorted to except to remove carious or necrotic bone or to evacuate a bone abscess. The operation on the skull, is performed to protect or relieve the brain from pressure and irritation, seldom with direct reference to the bone itself. Formerly the operation was resorted to only when

the brain was conspicuously disturbed by collections of pus, blood, or projecting fragments of bone, in depressed fractures of the skull. Under antiseptic methods, the operation is so safe that many surgeons advise it in all cases of fracture unless of the simple, undepressed form. Trephining is also used to remove brain tumors, to evacuate abscesses or effusions of serum or blood from other causes than fracture, to excise or relieve pressure upon a part of the brain to which epilepsy may be localized. In idiocy due to prevention of cerebral development by a skull abnormally small from premature ossification, a linear incision or saw wound is made, several inches long, on one or both sides of the median line, to allow expansion of the skull and development of the brain. Some improvement usually follows if the patient recovers, while death is preferable to the original state of the child.

TREPIDATION, n. *trěp'ĭ-dā'shŭn* [F. *trépídation*--from L. *trepidātiō* or *trepidātiōnem*. trembling, fear--from *trepīdus*, agitated, trembling]: a quaking or quivering from fear or terror; a state of confused hurry or alarm. **TREP'ID**, a. *-ĭd*, shaking; trembling. **TREPIDITY**, n. *trě-pĭd'ĭ-tĭ*, agitation; emotion.—**SYN.** of 'trepidation': agitation; disturbance; tremor; emotion; fear; alarm; fright.

TRESCOT, *trěs'kot*, **WILLIAM HENRY**: diplomat: b. Charleston, S. C., 1822, Nov. 10. He graduated at the College of Charleston 1840; was admitted to the bar 1843; appointed sec. of the U. S. legation at London 1852, and asst. sec. of state 1860, June. On the secession of S. C., he resigned and returned home, and served during a part of the war on the staff of Gen. Ripley, and 1862, 64, 66 in the legislature. In 1875 he removed to Washington to practice law; 1877 was appointed counsel for the United States on the fishery commission; 1880 a plenipotentiary to revise the treaties between the United States and China; 1881 a special commissioner to negotiate a protocol with Colombia concerning the rights of the United States on the Isthmus of Panama, and special envoy to Peru, Chili, and Bolivia; and 1882 a plenipotentiary to negotiate a commercial treaty with Mexico. He has published a number of historical works.

TRESPASS, n. *trěs'pās* [OF. *trespasser*, to exceed, to pass on or over--from L. *trans*, across; *passus*, a step (see **PASS**)]: transgression generally; any wrong or damage done by one person to another; unlawful entry on the lands of another; a known violation of the moral law; sin: V. to pass over a limit or boundary; hence, to go upon the lands of another unlawfully; to make entry or passage without right or permission; to intrude aggressively or offensively; to violate any known rule of moral duty; to transgress; to intrude; to go too far. **TRESPASSING**, imp. **TRESPASSED**, pp. *-pāst*. **TRESPASSER**, n. *-sēr*, one who trespasses; an offender. **TRESPASS OFFERING**, among the *Jews*, an offering for some known violation of the divine law.—**SYN.** of 'trespass, n.': guilt; misdemeanor; offense; transgression; misdeed; iniquity; wrong; injustice; wickedness; injury; breach; infringement

TRESPASS, in Law: any wrong or injury committed on either the person or property of an individual, not amounting to a crime. It includes a great variety of torts (see TORT). As regards a T. on the person, the more familiar term is an assault (see ASSAULT AND BATTERY) or imprisonment; but T. as to goods and chattels is more commonly known under the names of the remedies applied—e.g., actions of Trover (q.v.), Detinue (q.v.). T. is the technical as well as popular name for that kind of injury to a man's land or house by intruding into it against his will. In the law of England and the United States, the maxim is well known that every man's house is his castle, and he is entitled to treat as an enemy any person who attempts to enter without his leave. There are, however, a few exceptions to this rule of the inviolability of a man's house; for it is no protection against the officers of the law when executing criminal process—e.g., coming to apprehend a person charged with crime. But, as regards mere civil warrants, the officers of the law have no right to break open a man's outer door in order to effect an arrest for debt; and no civil court can give the officer such a power. The officer can only wait outside, or endeavor by some stratagem to enter the house in a peaceable manner; and if once inside the outer door, he can then break his way throughout the house to find his debtor. Such is the law as to intruding into a man's house armed with the authority of the law.

It is a general rule applicable to a man's house as well as land that if a stranger enter without leave, and do not quit at the request of the owner (who is not bound to state any reason for his request), the owner may by force eject the intruder. In doing so, however, he must not use more force than is necessary to overcome resistance offered. If the intruder enter with force, the owner may turn him out without even first requesting him to depart; but if the intruder enter quietly, he must first be requested to leave before hands can be put on him. If, in turning a stranger out, the owner is assaulted by the stranger, the owner may defend himself; but a policeman cannot interfere, or rather it is not compulsory on him to interfere, unless he sees an assault committed by the intruder. Sometimes it is erroneously believed that a person is entitled to go to another's house on lawful business, and insist on admission, and even to remain till he get an answer—e.g., a creditor to demand his money; but this is a mistake: a creditor may be ordered away, and has no more right to intrude than any stranger. It is also sometimes erroneously supposed that any member of the public is entitled to enter into certain public places, e.g., a shop or a theatre; but this is not so. Any shopkeeper can turn any person he pleases, at any moment, out of his shop, and is not bound to deal with any person unless he chooses. So with a keeper of a theatre or other place commonly described as a public place. There is an exception, however, as to an Innkeeper (q.v.) who, is bound if he have accommodation and the means, to admit a

traveller requiring refreshment. As to all other places, the general rule is, that whoever is the occupier of a house or of land is exclusively entitled to possession, and can extrude any person who refuses on request to leave; or if he prefer to resort to his legal remedy, he can sue such intruder in an action of damages. The amount of damages recovered will depend greatly on the circumstances attending the T., and whether insult or outrage was an accompaniment.—See BREACH (BREACH OF CLOSE).

It is often erroneously believed by the public, as well as by some landlords or occupiers, and it is probably a wholesome delusion, that it is a criminal offense for a stranger to trespass on lands, and that such stranger can be given into custody for doing so; and, to keep up this impression, it is common for landlords or occupiers to post a notice with the words, ‘Trespassers will be prosecuted.’ But the fact of such a notice, or of there being a fence to the land, makes no difference with regard to the trespasser, who is just as much liable to an action of damages, but to nothing else, for the T., whether he knew or not of such notice; and in neither case can he be given into custody, as for a criminal offense. There is no action at law for a T. unless damage has been done—material damage and not imaginary, for the law does not care for trifles. If, however, a trespasser were to break the trees, or do wilful damage (other than mere walking or riding), he may be liable to be apprehended; and if he is at the time trespassing with intent to catch or kill game, he may in some cases be apprehended and given into custody (see GAME: POACHING).

Not only human beings are trespassers, but the word is by analogy applied to the trespasses also of dogs, cats, and other animals. The trespasses of cattle are often of importance, because of the damage done. The rule of law which governs the rights of occupiers of land on this subject is the following: an owner is not bound to fence his land, and, whether fenced or unfenced, a neighbor is bound neither to trespass himself nor allow his cattle to trespass. If, therefore, A’s cattle trespass on B’s land, B can impound them—that is, he can lock them up, and keep possession till the owner pay for the damage done; or, if he prefer it, he can bring an action to recover the damages; or he may drive them off, and also bring the action, until by one or other remedy he is satisfied. With regard to dogs, cats, and similar domesticated animals, the rule is, that the owner is merely responsible for such mischief as they commit by reason of some negligence on his part. If, for example, he knows of some bad propensity which they have to stray and attack or damage third persons, then it becomes his duty to take such means as will prevent their doing the mischief; but he cannot be held responsible unless and until the animals have on a former occasion done the mischief—in other words, it is only for a second and not a first offense that he can be made liable.

To guard against T. both of men and of animals, owners of land have sometimes resorted to spring-guns and man-traps, placed in their grounds. This practice was carried

TRESS—TREVELYAN EXPERIMENT.

to a great height in England about the middle of the 19th c. In the United States the law does not authorize the setting of spring-guns, etc.; but in England the courts have decided that there is nothing to prevent an owner from so protecting his land. A statute, however, restricts such right to protection of dwelling-houses and gardens; so that now throughout the United Kingdom it is illegal to place man-traps and spring-guns in open fields. As regards, however, traps to catch dogs, cats, or other animals, an owner of land is entitled to place these in his lands, and even to allure the animals with bait, so as to invite them to their doom; but this must not be done so close to a highway as to tempt aside a dog lawfully passing along the highway, for the owner of a dog, being entitled to the use of the highway for the dog as well as himself, is entitled to have no danger placed in its way, such as a strong-smelling bait which should operate irresistibly on its animal instincts.

TRESS, n. *trēs* [F. *trousse*, a tress, a plait—from mid. L. *triciā*, a plait—from Gr. *trichā*, threefold: It. *treccia*; Sp. *trenza*, a plait of three bands of hair]: a three-plaited band of hair; a braid or lock of hair; a ringlet. **TRESSES**, n. plu. -*séz*. **TRESSED**, pp. *trěst*: **ADJ.** having tresses; formed into tresses; curled; knotted. **TRESSY**, a. *trēs'sī*, abounding in tresses.

TRESSURE, *trěsh'ūr*, in Heraldry: a subsidiary, generally said to be half the breadth of the orle, and usually borne double, and flowered and counter-flowered with fleurs-de-lis. It is part of the royal insignia of Scotland.

TRESTLE, n., or **TRESSEL**, n. *trēs'sl* [OF. *trestel*, a trestle: of uncertain origin, perhaps from L. *transtrum*, a transom: comp. Dut. *driestal*, a tripod: W. *trawst*, a rafter]: a frame consisting of a beam or bar fixed at each end to a pair of spreading legs (sometimes strengthened by diagonal braces), used with another or other frames of the same kind for supporting something, as a bridge, a table, or the like; the frame of a table: open braced framework for supporting the horizontal stringers of a bridge or other structure. **TRESTLE-BOARD**, a name applied to the designing-board of a draughtsman.

TRET, n. *trèt* [Norm. F. *trett*, draught—from L. *tractus*, pp. of *trahĕrĕ*, to draw]: *formerly*, an allowance to purchasers of goods for waste or refuse matter of 4 lbs. on every 104 lbs. after deducting the tare.

TREVAT, n. *trěv'at* [etym. doubtful]: a weaver's knife for cutting the loops of velvet pile.

TREVELYAN EXPERIMENT, *tre-věl'yan*: experiment in the expansion of metals by heat; named from the person who first carefully studied the phenomenon. When a block of iron or copper is considerably heated, and laid on a block of cold lead, a sound of some intensity, and more or less musical, is often heard. Trevelyan, after many trials, adopted for the upper block or 'rocker,' as it is called, a form somewhat resembling a fire-shovel, with a thickish block of metal instead of the blade: this is poised

TREVES.

delicately on the lead block, so as to bear with nearly equal pressure on two points separated by a groove; and the rounded end of the handle is also supported. The an-



nexed fig. shows a section of the head of the rocker and of the lead block. The rocker being heated, suppose it poised so as to touch the lead at A only. It heats the lead at A, and therefore suddenly expands it near that point, since lead is a poor conductor of heat. Thus, the lead, as it were, swells up at A, and tilts the rocker over to B. There the same process takes place, and so on; and as the rocker thus moves alternately from A to B, the successive impacts, at nearly equal intervals, form a musical sound. This can be altered at pleasure by loading the rocker, or by altering its moment of inertia. By proper care, almost any conducting body may be made thus to rock upon another, though, in the majority of combinations, the effect is very slight. The explanation above is due to Faraday.

TREVES, *trêvz* (Ger. *Trier*, Lat. *Augusta Trevirorum*): town of Rhenish Prussia, cap. of a circle; on the right bank of the Moselle, in a lovely valley between vine-covered hills, about 60 m. s.w. of Coblenz, 86 m. s. of Cologne. The river is here crossed by a bridge of 8 arches, 730 ft. long, 25 ft. wide. T. is a decayed place, and covers an area large in proportion to its population, owing to the number and size of the open spaces where houses formerly stood. The cathedral of St. Peter and St. Helen is a very interesting structure of various antiquity, principally of the early German Romanesque style of the 11th c., but retaining considerable remains in the interior of a previously existing Roman church of the age of Constantine. It has beautiful altars and tombs; rich old chasubles and missals, famous relics, among others the 'Holy Coat' (q.v.). Adjoining the cathedral is the *Liebfrauen-kirche*, a very graceful specimen of Early German Gothic architecture, finished 1243. The only other ecclesiastical buildings of interest now remaining are the chapel of the Benedictine convent of St. Mathias outside the town, and the church of the Jesuits. T. contains some beautiful old dwelling-houses of Romanesque architecture. No place in Germany is so rich in remains of the Roman period. Among these are the *Porta Nigra*, a colossal gateway, probably one of the five gates by which T. was entered in Constantine's time, the so-called Roman baths (more probably part of an imperial palace), and a basilica of Roman brick built by Constantine for a court of justice, which, after being successively the residence of the Frankish kings and archbishops, was mostly demolished to make room for an electoral palace erected 1614; this has recently been removed, and the basilica restored and fitted up as a Prot. church. Beyond the walls are the ruins of an amphitheatre. The piers of the bridge mentioned above, consisting of enormous blocks of lava, also are of the Roman period.

T. is the seat of a bishop, and of a provincial council, has a chamber of commerce, a priestly seminary, gymnasi-

TREVET--TREVITHICK.

um, a library of 96,000 vols. and numerous MSS., a museum full of valuable antiquities—including the famous *Codex Aureus*, or MS. of the Gospels in gold letters, presented to the abbey of St. Maximin by Ada, sister of Charlemagne—and various benevolent institutions. There are manufactures of woollens, cottons, and linens; also a brisk trade in corn, timber, and Moselle wines.—Pop. (1880) with suburbs 37,431; (1885) town alone 26,125; mostly Rom. Catholics: (1890) 36,162; (1895) 40,026.

T. derives its name from the *Treviri* or *Treveri*, a Gallic or, more probably, Belgic people, who in Caesar's time inhabited a large tract between the Meuse and the Rhine. Their cap., *Augusta Trevirorum*, became a Roman colony probably in the time of Augustus, and ultimately became the headquarters of the Roman commanders on the Rhine, and a frequent residence of the emperors, particularly Constantine. Under the Franks, into whose hands it fell 463, it continued to flourish. In 843, it passed to Lorraine; in 870, to Germany; in 895, back to Lorraine; and finally was united to Germany by Emperor Henry I. The Abp. of T. was, in virtue of his office of chancellor of Burgundy, one of the electors of the empire, a right which seems to have originated in the 12th or 13th c., and continued till the French Revolution. The ambition and talents of some of these episcopal rulers obtained for them great political weight in Germany. Since 1814, T. has belonged to Prussia.—See Haupt, *T.'s Vergangenheit und Gegenwart* (2 vols. Trier 1822); more recent works by Schmidt, Bärsch, Braun, Leonardy, and Von Wilmski; also Freeman's *Historical and Architectural Sketches* (1876).

TREVET, n. *trév'ët*, or TRIVET, n. *triv'ët* [F. *trépiéd*, a trivet, tripod—from L. *tripēs* or *tripēdem*, three-footed—from *tres*, three; *pes* or *pedem*, a foot]: a stool or stand supported by three legs; a movable iron frame or stand to support a kettle, etc., on a grate, and keep it from pressing on the coals. RIGHT AS A TRIVET, *familiarly*, all correct; in good health.

TREVISO, *trā-vē'sō*: town of Italy, cap. of the province of T.; on the river Sile, in a very fertile country, 17 m. n. of Venice, with whose lagoons the river communicates by canals. It is the seat of a bishop, and has a handsome duomo, with five cupolas, and with an altar-piece of the Annunciation by Titian; and among other buildings are the old Gothic church of San Nicolo (with some excellent pictures), the public library (30,000 vols.), and a fine theatre. The town is surrounded by a wall 24 to 38 ft. in height, and strengthened by numerous bastions. There are manufactures of hardware, a sugar refinery, a bell-foundry, and paper-mills.—Pop. of town (1901) 33,987.

TREVITHICK, *trév'ī-thīk*, RICHARD: 1771, Apr. 13—1833, Apr. 22; b. Illogan, England: mechanical engineer. He became an engineer in the Cornish mines early in life; built several steam-engines containing original improvements; patented a high-pressure steam-engine for use on roads and tramways as motive power 1802; and with an

improved one drew a load of 10 tons at the rate of 5 m. per hour at Merthyr Tydvil 1804, Feb. 21. The accidental blowing up of this engine and the general ridicule of his project delayed the actual introduction of the locomotive engine into England several years. T. resumed mining work in Cornwall and spent several years in mining in Peru, whither he had shipped a number of his small high-pressure condensing engines; but returned to England penniless 1827. He invented a large number and variety of useful articles, but obtained little profit from them.

TREVOR, *trē'vēr*, Sir JOHN, Knight: 1633–1717, May 20; b. England. In the parliament of James II. which met 1685, May 19, he was elected speaker of the house of commons, being a minion of Jeffreys (q.v.), whose bullying style he sometimes imitated. In the same year he was made master of the rolls. He contrived to maintain his political and judicial position after the revolution of 1688, and was again elected speaker 1690, acting also as first commissioner of the court of chancery, in which position, as in the speaker's chair, his greed and venality became notorious. In 1695 his conduct was investigated by a committee of the house of commons; and as a result he was declared guilty of high crime, and was formally expelled, though he retained the mastership of the rolls.

TREY, n. *trā* [OF. *trei*; L. *tres*, three]: a three at cards or dice; a card of three spots.

TRI-, *trī* [Gr. *treis*, three; *tris*, thrice: L. *tres*, three]: a common prefix in scientific terms, signifying *thrice*, or *in threes*—as in *tripartite*, divided into three parts; *trilobate*, three-lobed.

TRIABLE, a. *trī'ā-bl* [see TRY]: that may be subjected to trial or test; that may undergo a judicial examination. **TRI'ABLENESS**, n. *-nēs*, the state of being triable.

TRIACONTAHEDRAL, a. *trī'ā-kōn'tā-hē'drāl* [Gr. *tria-konta*, thirty; *hedra*, a seat, a base]: having thirty sides; bounded by thirty rhombs.

TRIAD, n. *trī'ād* [Gr. *trias* or *triāda*, the number three—from *treis*, three: F. and It. *triade*]: a union of three; three objects or subjects which may be connected more or less—e.g., Creation, Redemption, and Resurrection, or Romans, Saxons, Normans: in *music*, the common chord, consisting of a tone with its third and fifth: in *chem.*, an element which combines with three atoms of a monad element (see VALENCY). **HINDU TRIAD** (see TRIMURTI). **TRIADIC**, a. *trī-ād'ik*, pertaining to a triad.

TRIADELPHOUS, a. *trī'ā-dēl'fūs* [Gr. *treis*, three; *adelphos*, a brother]: in *bot.*, having stamens united in three bundles by their filaments.

TRIAL, n. *trī'āl* [from TRY, which see]: any effort or exercise to ascertain what can be done; an attempt; an endeavor; examination by test or experiment; experience; any suffering or temptation that puts strength or virtue to the test; affliction; the formal examination before a judge (and usually a jury) by means of witnesses in a court of law, as to whether certain alleged facts or charges are true or un-

TRIALITY—TRIANGLE.

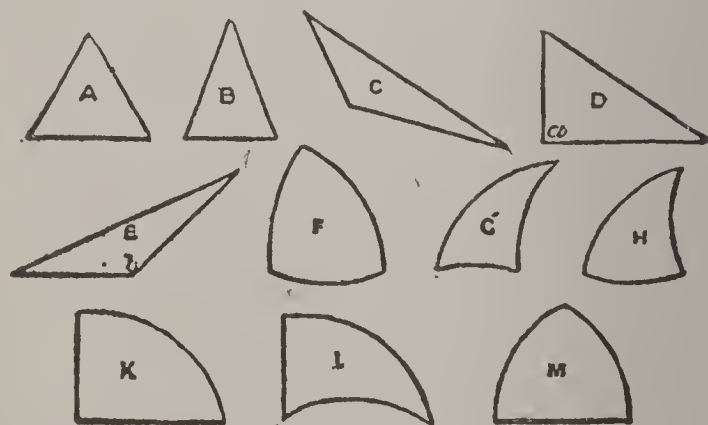
true. TRIAL AT BAR, a jury trial before the full court of four judges—a procedure seldom resorted to.—SYN. of 'trial': effort; attempt; endeavor; essay; experiment; exertion; test; proof.

TRIALITY, n. *trī-ăl'ī-tī* [formed from a supposed *trial*, composed of three (in imitation of *duality*, from *dual*, composed of or pertaining to two)—from L. *tri-*, three, and *-ity*, a terminative denoting state or condition]: threefold character or state; threeness. [Rare.]

TRIAMINE, n. *trī'ām-ēn* [Gr. *treis*, three; Eng. *amine*]: in *chem.*, an amine containing three atoms of nitrogen, or derived from three molecules of ammonia.

TRIANDRIAN, a. *trī-ăn'drī-ăn*, or TRIAN'DROUS, a. *-drūs* [Gr. *treis*, three; *anēr* or *andra*, a man]: in *bot.*, having three distinct and equal stamens, as in the class TRIAN'DRIA, n. plu. *-drī-ă*.

TRIANGLE, n. *trī-ăng'gl* [F. *triangle*—from L. *trian-gŭlum*, a triangle—from L. *tres*, three; *angŭlus*, a corner, an angle]: plane figure bounded by three lines, having three corners or angles; anything in the form of a triangle; a musical instr. of percussion, made of metal, and struck while hanging free; so called from its shape. TRIAN'GLED, a. *-gld*, having the form of a triangle; formed into triangles. TRIAN'GULAR, a. *-gŭ-lēr*, having the form of a triangle; relating to a triangle. TRIAN'GULARLY, ad. *-lī*. TRIAN'GULAR'ITY, n. *-lăr'ī-tī*, quality of being triangular. TRIAN'GULATE, v. *-lăt*, to divide into portions in the form of triangles for surveying; to make triangular. TRIAN'GULATING, imp. TRIAN'GULATED, pp. TRIAN'GULA'TION, n. *-lă'shŭn*, division of a district of country into portions in the form of triangles for convenience of accurate measurements (see below). TRIANGULAR COMPASSES, compasses with three legs for taking and laying off three points at once. TRIANGULAR NUMBERS: see FIGURATE NUMBERS.—*Triangles* are classed according to the relative length of their sides, as *equilateral* (A), or equal-sided;



Triangles.

isosceles (B), or having two sides equal; and *scalene* (C), or unequal-sided, the equality or inequality of the sides carrying with it the equality or similar inequality (of *greater* or *less*) of the angles respectively opposite to these sides, though the *ratio* of inequality of the sides not at all corre-

TRIANGLE OF FORCES.

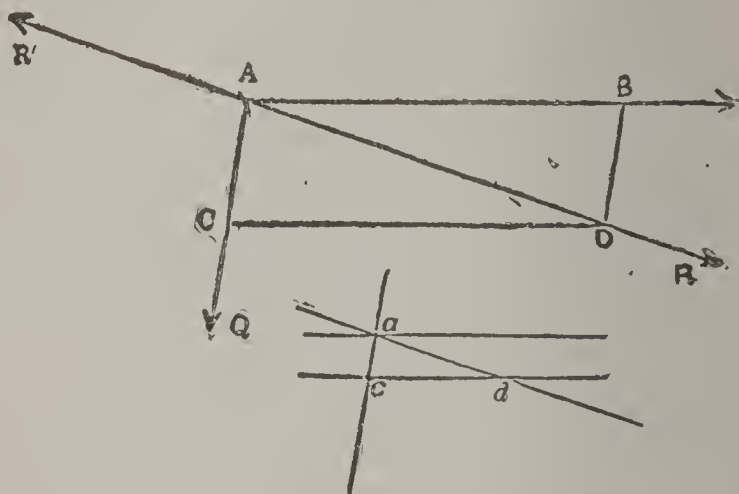
sponds to that of the angles. Considered with reference to the size of its angles, a T. is *right-angled* (D) when one of its angles (a) is a right angle (90°); *obtuse-angled* (E), when it has one angle (b) greater than a right angle; and *acute-angled* (A or B), when it has no angle so great as a right angle; the well-known property, that the sum of the angles of a T. is equal to two right angles, preventing the possibility of more than one of them being as great as a right angle. For the relations between the sides and angles of a T., see TRIGONOMETRY. The T. being the fundamental figure of plane geometry, through which the properties of all other figures have been arrived at, the investigation of its properties has always been held of primary importance. Of the immense number of results obtained by investigation, we notice only two or three. The lines joining the angles of a T. with the points of bisection of the opposite sides, intersect at the same point, as also do the perpendiculars from the angles on the opposite sides, the lines bisecting the angles, and the perpendiculars from the middle points of the sides. The point of intersection of the first series of lines is the centre of gravity of the T.; those of the third and fourth series are the centres of two circles, the former of which touches the sides internally, and the latter passes through its three angular points. Another remarkable property of triangles, known as Napoleon's problem, is as follows: if on any T. three equilateral triangles be described, and the centres of gravity of these three be joined, the T. thus formed is equilateral, and has its centre of gravity coincident with that of the original T: see TRIGONOMETRY: HYPOTENUSE. The area of a T. is half of that of a parallelogram which has the same base and altitude, and is thus equal to half the product of the base into the altitude; it may be expressed also by the formula $\sqrt{S(S-a)(S-b)(S-c)}$, where a, b, c , are the lengths of the sides, and S is half their sum.

In the geometry of the sphere, a T. is a figure bounded by three arcs of circles (as F, G, H, K, L, and M).

TRIANGLE OF FORCES: in mechanics, a proposition which is merely a formal modification of the *Parallelogram of Forces* (q.v.), and as generally stated, is its converse. The parallelogram of forces enunciates that, if two forces, P and Q (fig.)—represented in direction and magnitude by AB and AC—inclined at an angle to each other, act on a point A, their resultant, R, is represented in direction and magnitude by the diagonal, AD, of the parallelogram formed on the two lines AB and AC. Now, as the resultant, R, is equivalent to the combined action of P and Q, it would exactly counterbalance them if acting in the opposite direction AR', but would still be fully represented by the diagonal line AD, taken as from D to A. Also, instead of AB, CD may be taken to represent P. Hence as the sides of the triangle ACD completely represent the three forces, we have the proposition, *that if three forces in the same plane be in equilibrium on a particle, and if in that plane any three mutually intersecting lines be*

TRIANGULATION.

drawn parallel to the directions of the forces, the lengths of the sides of the triangle thus formed will be proportional to the magnitudes of the forces. Its proof rests on the previously ascertained fact, that R' , P , and Q , three equilibrating forces at A , are proportional to AD , CD , AC ; and on the geometrical theorem, that a triangle whose sides are respectively parallel to those of another triangle, has its sides



proportional to those of the latter; consequently, the ratio and relative direction of the forces R , P , and Q , are fully represented by ad , cd , and ac , the sides of the triangle acd . Again, as the sides of a triangle are to one another as the sines of the opposite angles, so also are the forces which the sides represent. Hence

$$P : Q : R' :: CD : AC : AD$$

$$:: \sin. CAD : \sin. ADC : \sin. ACD$$

(and substituting the sines of the supplementary angles)

$$:: \sin. QAR' : \sin. PAR' : \sin. PAQ;$$

that is, each force is proportional to the sine of the angle between the directions of the other two.

TRIANGULA'TION: operation of dividing any portion of the earth's surface into triangles of as large size as possible, which may be called primary, and which must be afterward subdivided into smaller triangles, forming a great network of secondary or subsidiary triangles, which serve as a means of working down from great to less, and finally completing, by a system of scientific checks, an accurate map or delineation of the region covered by such triangles, forming the geodesical process called a trigonometrical survey: see **TRIGONOMETRICAL SURVEY: ORDNANCE SURVEY: GEODESY**. The same operation is used in the measurement of an arc of the meridian for ascertaining the length of a degree of latitude or longitude on any part of the earth's surface; but in this case, only primary triangles are necessary, as no topographical detail is required, and the positions of the apexes of the triangles are astronomically fixed in the most careful manner, which is not always done in the triangles of a trigonometrical survey.

In carrying out a system of T., much judgment and an accurate local knowledge of a country are necessary; and

TRIARCHY—TRIBASIC.

it often happens that a more extensive range of angles can be obtained from a comparatively low station than from the tops of the highest mountains. The angles of each triangle should be as near equal as possible, and unless local circumstances render it unavoidable, very acute or obtuse angles should not be used. The sides of the primary triangles should be as long as can be conveniently observed, but in practice they vary from 80 m. or more to 4 m., or even less. The angles are generally determined by a large theodolite, of as simple and strong construction as possible, fixed on the most elevated points of mountain-ranges, etc. When the apexes of the triangles are very distant, heliostats, or mirrors reflecting the sun's rays, are often used, and in dark or cloudy weather the Drummond light has been employed. The primary triangles being fixed on the spherical surface of the earth, certain formulæ, according to the rules of spherical trigonometry, must be applied to reduce them to the simple calculations for ascertaining, from certain known data, the sides and angles of plane triangles. The whole of those calculations are dependent on the accurate measurement of a base or fundamental line. The length of base-lines used in modern surveys varies from 3 to 7 m. At the end of a large T., a second or testing base-line is always measured at a distance from the original one; if the measured length of this agrees with that ascertained by calculation, it may be considered a proof of the accuracy of the work in general.—See art. 'Celestial Measurements and Weighings,' by Sir John Herschel, *Good Words* (1864).

TRIARCHY, n. *trī'âr-kî* [Gr. *treis*, three; *archê*, government]: government by three persons.

TRIAS, n. *trī'ās*, or **TRIASSIC SYSTEM**, *trī-ās'sîk* [Gr. *trias*, the number three, a triad]: in *geol.*, a triple series, the oldest of the Mesozoic period, formerly associated with the Permian rocks under the name New Red Sandstone (q.v.), so called by German geologists because they are separable into three distinct formations: the Keuper, Muschelkalk, and Bunter Sandstein; and the name has been generally adopted, as the beds are more fully developed in Germany than elsewhere. The German beds have consequently been accepted as types of the group. The typical beds are divided into—1. Keuper (q.v.), with a maximum thickness of 1,000 ft.; 2. Muschelkalk (q.v.), with a maximum thickness of 600 ft.; 3. Bunter Sandstein (q.v.), with a maximum thickness of 1,500 ft.—In the United States, the Jurassic is distinct in the far west, but in the east, where the red sandstone occurs from the Connecticut river valley southwestward, the Trias is not clearly distinguished from the succeeding Jurassic, and hence has been called the Jura-Trias. **TRIAS'SIC**, a. pertaining to or composed of trias.

TRIATOMIC, a. *trī-â-tôm'îk* [Gr. *treis*, three, and Eng. *atomic*]: possessing or consisting of three atoms.

TRIBASIC, a. *trī-bâ'sîk* [Gr. *treis*, three; *basis*, a base]: in *chem.*, requiring three molecules of base to one of the acid to form a neutral salt; thus, citric acid is *tribasic*.

TRIBE.

TRIBE, n. *trib* [L. *tribus*, a tribe—from *tres*, three, being one of the *three* original great divisions of the Roman people: F. and It. *tribu*, a tribe: Gael. *treubh*, a tribe, a clan]: a family or race existing distinct from others; any class or distinct portion of a people; a number of things having certain common characteristics; a division between order and genus; a group of genera subordinate to an order; a body of rude or savage people under one chief. TRIBAL, a. *trib'al*, belonging to a tribe. TRI'BALISM, n. *-izm*, the state of tribal existence.

TRIBE: an aggregate of stocks—a stock being an aggregate of persons considered to be kindred—or an aggregate of families, forming a community usually under the government of a chief. The chief is possessed of despotic power over the members of the T. It is commonly said that he has 'patriarchal' power—such power, that is, as fathers in early times exercised over their children. The T. has been the earliest form of the community among all the races of men.

In a very large proportion of existing tribes, the T. is an aggregate of several stocks or distinct bodies of kindred. The persons of whom the T. consists are included in stocks which are, or are accounted, distinct. This organization is sustained by two tribal customs—(1) persons of the same stock are forbidden to intermarry; and (2) kinship is reckoned through females only, so that children are accounted of the stock of their mother. Persons of the same stock, too, owe duties to each other, and are to some extent sharers in each other's liabilities. Thus, an injury done by a man is an injury done by his stock, which may be avenged upon any member of it; an injury done to a man is an injury done to his stock, for which every member of it is bound to seek vengeance. In consequence of the customs above mentioned, a husband must be of a different stock from his wife or wives; he must therefore be accounted of a different stock from his children; and when he has wives of different stocks, their respective children are accounted of different stocks. More than one stock is thus represented in every household; and since a man owes duties to his stock—the duties of acknowledged blood-relationship—while to those of his family who are not of his stock nothing but the accident of birth (only accident) unites him, the family among these tribes has necessarily little cohesion. The tribal customs which have been referred to largely ignore the family; they are founded on the idea of stock. They are the customs of people with whom the conception of stock was a powerful social influence when that of the family was impotent; and it follows that the family, as now existing among these tribes, has *grown* among them. Now, in many cases the only obstacle to its rapid development is the firm hold which the idea of stock has taken of the tribal life. On the other hand, the prevalence of customs founded on the idea of stock proves a prior existence of stocks or bodies of kindred: the separation into stocks must be older than the customs, at least as customs associated with the idea of

stock. And keeping this in view, and considering how difficult it is to conceive of several stocks herding together at the early time when every stranger was an enemy, unless there was some natural connection between them—such a connection as the marriage-law and the system of kinship, when they arose, would establish—it may be concluded that each stock was originally a separate tribe.

This is made the basis of what is called the development theory of the T. (see *Primitive Marriage*, by J. F. McLennan, 1865), which is the theory outlined below. Into the T. conceived of as a single stock, the marriage-law and system of kinship would gradually bring a variety of neighboring stocks; and thus the T. would become what it is—an aggregate of stocks. The progress of such tribes appears to have been from the T. conceived of as a group of kindred to the T. consisting of several stocks or groups of kindred; and now, though the family is not yet fully developed among them, they seem to be tending to become aggregates of families. The tribes of Australasia are the most perfect examples of the organization above described; but it exists (or existed) also among the tribes of N. America and most of those of S. America, among a majority of the known tribes of Africa and a large proportion of the ruder tribes of Asia.

Suppose male kinship (which must come with the growth of the family) introduced among tribes such as have been spoken of, containing different stocks. First, the stocks existing within the T. would be fixed, stereotyped, within it; second, the growth of the family would be greatly promoted, and the influence of the idea of stock proportionately diminished. The family would in time rise to the importance originally possessed by the stock; and at length the T., still divided into stocks, would become, politically, an aggregate of families. The T. would thus assume the exact shape which it had in the early ages of Greece and Italy, when it was an aggregate of families included in clans or bodies considered kindred (*gentes*)—the exact shape which it now has among the most advanced existing tribes. Since the T. of the Australian type might thus develop into a T. of the classical type, is it not probable that the latter really was the result of such a development? Regarded as a hypothesis, this view will be found to fulfil all the conditions of a good hypothesis. And if the circumstances of tribes which have what is popularly termed the marriage-law of caste—among the greatest of which a division corresponding to the Roman *gens* prevails—can be reconciled with it, or with an extension of it, we shall have reached a hypothesis capable of explaining the formation of tribes in general. The tribes above referred to, whether divided into clans or not, consider themselves of a common stock. They restrict marriage to the stock; but they always forbid marriage within certain degrees of relationship; and in numerous cases—among them, those of the most numerous caste peoples—they also forbid marriage within the clan or body considered peculiarly kindred. It will be convenient, for want of a better word, to speak of

TRIBE.

this marriage-law as caste. And by caste tribes, in what follows, are meant tribes which have this marriage-law.

Seeing that the law forbidding marriage within the T. (now generally known as the system of *Exogamy*), and the law restricting marriage to the T., have been widely prevalent among human races, both must be conventional, produced by circumstances; and if in their origin they are equally ancient, men, at the first, in respect of their circumstances, must long have been divided into two bodies very differently placed. This, however, is very improbable. There is no evidence for it; there is some evidence against it. The circumstances, too, capable of producing caste must have been isolating circumstances; and it is difficult to conceive of these operating in the earliest times. For various reasons it is probable that caste did not prevail in the earliest times—was not the original law of any tribes. Of these reasons a specimen is found in the law of incest which prevails among the greatest of caste peoples, by which marriage is forbidden, not only within certain degrees of relationship, but also within the clan or body of kindred denoted by a family name. The existence of any law of incest among a caste people requires explanation. But how could a prohibition of marriage within the clan arise among people whose principle it was to marry within the kindred? This can be referred only to circumstances which preceded the origin of caste. Does it not, then, suggest the establishment, through the force of isolating circumstances, of caste—the restriction of marriage to the T. or to particular tribes—among tribes divided into stocks which had forbidden marriage within the stock? This would, at any rate, account for the facts. The original prohibition, on this view, is still represented by the prohibition of marriage within the clan. But as tribes advanced, the family usurped the place of the stock; there sprang up a belief in the common origin of the T.; and the law of succession to family property gave a new importance to near relationships. The law of incest would naturally tend to follow the practically important limits of relationship.—This hypothesis of development is thus capable of connecting together all the varieties of the T., the simplest with the most advanced. Illustrations of this hypothesis are drawn from several different lines of facts, of which the following is one. It is claimed as the received opinion that, among the advanced tribes containing gentes, property was originally vested in the gens, and was only by slow degrees wrested from it by the family. It is involved in this, that at one time the gens was everything, the family nothing, in the organization of the T.; that the family grew, and that, as it grew, the T. sank in importance. The T., when property was exclusively vested in its gentes, must have been an aggregate of gentes, not of families. All this is corroboratory of the hypothesis of development; in particular, it strongly corroborates the view that the T. at an early period consisted of several bodies of kindred, accounted distinct from each other, and each of which held

TRIBLET—TRIBULATION.

property in common. It has never been accounted for on any other view.

The only other theory which has been formed of the origin of tribes—and till recently almost universally received—is the patriarchal theory. This, briefly stated, is that a T. consists in the main of the descendants of a single family, descent being chiefly, if not exclusively, reckoned through males; and that the gentes found within the tribe consist of the descendants of individual sons or grandsons of the common progenitor. It is alleged by some that this theory does not explain the organization of the numerous class of tribes first considered. It has been formed on observation of the advanced tribes of the classical type, but it does not consist with the history of property (to test it at a single, but a vital, point) even among them. It might account for property being vested in the T.; it does not account for it being vested in the gentes. It can do so only by the assumption that, though the sons and grandsons of the original progenitor had the desire for family property, and divided his property, or accumulated property of their own, their descendants suddenly lost that desire, and began to hold in common. It is claimed that the patriarchal theory is excluded also in the case of all polyandrous peoples, for that theory assumes that society began with monandric marriage, a perfect idea of the family and male kinship—all conditions the very opposite of those which must at one time have prevailed among such peoples. But this last statement, it must be noted, involves at least as great an assumption as is involved in the theory which it opposes.

TRIBLET, n. *trib'let*, or TRIBOLET, n. *trib'ō-lēt* [F. *triboulet*]: a goldsmith's tool used for making rings; a steel cylinder round which metal is bent in the process of forming tubes, nuts, etc.

TRIBOMETER, n. *tri-bōm'ē-tēr* [Gr. *tribein*, to rub; *metron*, a measure]: an instr. for ascertaining the degree of friction in rubbing surfaces.

TRIBONIAN, *tri-bō'nī-an* (TRIBONIA'NUS, -ā'nūs): eminent Roman jurist of the 6th c.: b. Pamphylia, of Macedonian parentage; died A.D. 545. He held, under Emperor Justinian, the offices of quæstor, master of the imperial household, and consul; but he is famous chiefly through his labors in connection with the Code (q.v.) of Justinian (q.v.) and the Pandects (q.v.).

TRIBRACH, n. *tri'brāk* [Gr. *treis*, three; *brachus*, short]: in *poetry*, a foot of three short syllables, two of which belong to the thesis and one to the arsis, or *vice versa*.

TRIBULATION, n. *trib'ū-lā'shūn* [F. *tribulation*—from mid. L. *tribulātiō* or *tribulātiōnem*, distress—from *tribulum*, a sledge for rubbing out corn, consisting of a broad beam of wood studded underneath with sharp pieces of flint or with iron teeth, used in threshing grain: literally, a thresher]: that which occasions distress or vexation; severe affliction; great grief, sorrow, or suffering.

TRIBUNE—TRICHECUS.

TRIBUNE, n. *trīb'ūn* [L. *tribūnus*, the chief of a tribe, a commander—from *tribus*, a tribe: It. *tribuno*: F. *tribun*]: among the *anc. Romans*, an officer or magistrate chosen by the people to protect them from the oppression of the nobles, and to defend their liberties (see **ROME**—Ancient Italy: also **PLEBEIAN**: **PATRICIAN**); a rostrum or elevated platform from which speeches are delivered, as in the French assembly. **TRIB'UNARY**, a. *-ū-nă-rĭ*, of or pertaining to tribunes. **TRIB'UNESHIP**, n. *-shĭp*, the office of a tribune; also **TRIB'UNATE**, *-ūn-ăt*. **TRIBUNAL**, n. *trĭ-bū'năl* [L. *tribūnal*, a raised platform on which the seats of magistrates were placed: F. *tribunal*: It. *tribunale*]: a bench or raised seat of a judge; a court of justice. **TRIBUNI-TIAL**, a. *trĭb'ū-nĭsh'ăl*, or **TRIB'UNI'CIAN**, a. *-ăn*, pertaining to tribunes; suiting a tribune.

TRIBUTE, n. *trĭb'ūt* [L. *tribūtum*, a stated payment—from *tribŭō*, I allot, I bestow—from *tribus*, a tribe: It. *tributo*: F. *tribut*]: a stated sum or a valuable consideration of some kind paid annually by a conquered or subject state to a superior as an acknowledgment of submission, or as a price for peace or protection; a personal contribution; anything given as a token of esteem. **TRIB'UTARY**, a. *-ū-tĕr-ĭ*, paying tribute; subject or subordinate; yielding supplies of anything: N. a state that pays tribute to a superior; any stream which, directly or indirectly, contributes water to another stream. **TRIB'UTARINESS**, n. *-nĕs*, state of being subject or tributary.—**SYN.** of 'tribute': tax; impost; rate; duty; custom; assessment; cess; due; toll; charge; levy; subsidy.

TRICAPSULAR, a. *trĭ-kăp'sŭ-lĕr* [L. *tres*, three; *cap-sŭla*, a little chest]: in *bot.*, having three capsules.

TRICE, n. *trĭs* [Sp. *trĭs*, noise made by the breaking of glass, an instant: comp. Scot. phrase 'in a *crack*']: an instant; a moment; a very brief space of time; a 'jiffy.' **WITHIN** or **IN A TRICE**, in a very short time.

TRICE, v. *trĭs* [Sw. *trissa*; Norw. *triss*; Dan. *tridse*, a pulley: Low Ger. *drysen*, to hoist]: to hoist aloft; to haul up and secure by means of a small rope. **TRIC'ING**, imp. **TRICED**, pp. *trĭst*.

TRICENNIAL, a. *trĭ-sĕn'nĭ-ăl* [L. *tricĕni*, thirty at a time, thirty each; *annus*, a year]: belonging to or noting the number thirty; occurring once in thirty years. **TRICEN-TENARY**, n. *-tĕ-nĕr-ĭ* [L. *tricentĭ*, three hundred]: a period or space of three hundred years; a day commemorative of any event which took place three hundred years before: also **TERCENTENARY** (q.v.).

TRICEPS, n. *trĭ-sĕps* (L. *tres*, three; *caput*, a head]: in *anat.*, the three-headed extensor muscle of the arm.

TRICH'ECUS: see **MORSE**.

TRICHIASIS—TRICHINA SPIRALIS.

TRICHIASIS, n. *trĭ-kī'ă-sĭs* [Gr. *thrix* or *tricha*, hair]: a disease of the eye in which some of the hairs of the eyelash turn in upon the eyeball and produce irritation, the other hairs retaining their natural position. This disease is exceedingly common among the lower classes, especially of the Irish. This affection causes great annoyance, by exciting a pricking sensation, and a constantly irritable and watery state of the eye. The treatment consists in plucking out the offending hairs (if they are few) from time to time, each hair being removed by hair-forceps with a slow steady pull. If they form a little group, they must be removed by dissecting out the small portion of lid in which they are implanted, and uniting the wound with a suture. In other cases it may be necessary to remove the entire margin of the lid.

TRICHIDIUM, n. *trĭ-kīd'ĭ-ŭm* [Gr. *thrix* or *tricha*, hair; *eidos*, resemblance]: in bot., a filamentous organ resembling a netted purse, in which the spores of certain fungi are included.

TRICHINA, n. *trĭ-kī'na*, plu. **TRICHINÆ**, -*nē* [Gr. *thrix* or *tricha*, hair]: a minute parasite or worm, infesting, in the adult state, the intestinal canal, and in its larval state the muscular tissue, of man and certain mammals, especially the hog: more fully called *Trichina Spiralis* (q.v.). **TRICHINIASIS**, n. *trĭk'ĭ-nī'ă-sĭs*, or **TRICHINO'SIS**, n. -*ĭ-nō'sĭs*, disease produced by trichinous meat; the disease of trichinous meat (see below). **TRICHINOUS**, a. -*ŭs*, producing or produced by trichinæ; relating to the disease trichiniasis.

TRICHINA SPIRALIS, *trĭ-kī'na spĭ-răl'ĭs*: peculiar nematoid worm, which, in its sexually immature state, inhabits the muscles, usually of the pig. It was discovered 1835—the demonstrator of anatomy at St. Bartholomew's Hospital, London, giving to Prof. Owen four microscopic specimens of speckled muscle from a subject then in the dissecting-rooms. Paget, then a first-year's student, simultaneously investigated the question, and read a paper on the subject to the Abernethian Soc. a week before Prof. Owen's memoir was read to the Zoological Soc. Prof. Owen, to whom the discovery of the T. is generally referred, in communicating to the Zoological Soc. his 'Description of a Microscopic Entozoon infesting the Muscles of the Human Body,' describes the speckles as capsules containing a spirally-coiled microscopic worm. To this worm he gave its name, T. S. From the date of this discovery to the present time, the T. S. has been a source of discussion. In 1845, the idea was advanced by various naturalists that it was the undeveloped or sexless form of some other worm; and 1855 (after the transformation of the cysticercus into the tapeworm was discovered), various suggestions were made on this subject; but it was not till 1860 that Virchow and Leuckart, by feeding animals on flesh containing trichinæ, arrived independently at the correct conclusion, that the parents of the encysted trichinæ are small nematoid worms, which had never previously been described, Leuckart's experiments being made with

TRICHINA SPIRALIS.

human flesh containing these parasites. See NEMATOIDEA: NEMATELMIA.

The young trichinæ, as they are seen in the human muscles, present the form of spirally-coiled worms, in the interior of small, globular, oval, or lemon-shaped cysts, which appear as minute specks scarcely visible to the naked eye. These cysts are more or less covered externally with calcareous matter, according to the time during



Fig. 1.—The worm lying coiled up in muscle, the outside of the cyst supporting fatty tissue, vessels, etc. (magnified).

which they have remained fixed, and the degree of degeneration which their walls have undergone. The T. measures, according to Cobbold, on an average $\frac{1}{78}$ of an inch in length, and $\frac{1}{130}$ of an inch in breadth. The cysts are sometimes altogether absent; hence they must be regarded as abnormal formations, resulting from local inflammation set up by the presence of the worm, which in this larval condition of existence measures $\frac{1}{25}$ of an inch in length, and $\frac{1}{30}$ of an inch in breadth. These larval worms show a well-marked di-

gestive apparatus, and reproductive organs often sufficiently developed to enable the observer to determine the sex. The number of larval trichinæ that may simultaneously exist in the muscles of a single man or animal is enormous. In a cat on which Leuckart experimented, a single ounce of flesh was estimated to contain 325,000 trichinæ; and if all the voluntary muscles of a human body of ordinary size were similarly affected, the number of worms would exceed 1,950 millions. Dr. Cobbold believes that there can be no doubt that the number in a single 'bearer' (as he terms the sufferer) may *actually* amount to at least 20,000,000.

We proceed to consider the mature worms. When an animal is fed with flesh containing the larval worm above described, and is killed a few days afterward, a large number of minute worms are found mixed with the contents of the small intestines. On closer examination, they are found of two kinds—the larger and more numerous ones being the females, and the smaller and rarer ones the males. At the second day after their introduction, these intestinal trichinæ attain full sexual maturity; and in six days, the females contain perfectly developed and free embryos in their interior.

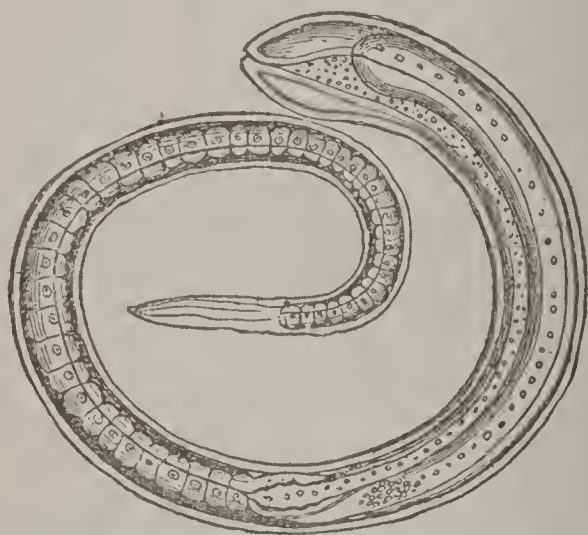
The female is a slender round worm, varying in length from $\frac{1}{12}$ to $\frac{1}{8}$ of an inch. The anterior end presents a bead-like appearance, from which the intestinal canal proceeds. The posterior three-fourths are mainly occupied by the reproductive organ, which is filled partly with free embryos, and partly with eggs in various stages of maturity. When these embryos have attained their full size within the uterus of the parent, they pass out at the genital aperture, and commence life on their own account. They



Plants of the Keuper Beds, restored.

TRICHINA SPIRALIS.

are little worms with rounded ends, and present no indications of any internal organs. The male worm is seldom more than two-thirds the length of the female. It presents the same bead-like arrangements as the female, and a reproductive organ whose aperture apparently coincides with the anus; while the female sexual aperture is comparatively near the head-end of the worm. The body terminates with two hooks, doubtless subsidiary to the reproductive process. The males are less numerous and shorter-lived than the females, and probably die after having discharged their natural function. The females continue bringing forth young for two or three weeks. The embryos, according to Leuckart, Cobbold, and all leading helminthologists, penetrate the walls of the intestine, and pass directly into the muscles of their 'bearers'



Sexually mature female *Trichina spiralis* (highly magnified).

or 'hosts,' where, if the conditions are otherwise favorable, they are developed into the form originally observed by Owen and Paget. In this way, by proceeding along the course of the intermuscular connective tissue, some reach the muscles of the extremities and other distant parts; but the majority of the wandering embryos (according to Virchow) 'remain in those sheathed muscular groups which are nearest to the cavity of the body (abdomen and thorax), especially in those which are smaller and most supplied with connective tissue.' These embryos penetrate into the interior of the separate muscular bundles, and in the course of 14 days acquire the size and organization of *T. S.* The surrounding tissues soon become disorganized, and the spot inhabited by the coiled-up worm is converted into a spindle-shaped widening, within which the previously described cyst is formed by a hardening and calcification of the exterior. A point of great importance in relation to the distribution of this parasite, and as having a practical bearing on the disease known as *Trichiniasis* (q.v.), has been established by the experiments of Davaine—viz., that while in the adult condition, trichinæ perish in cold water in about an hour, and cannot survive the decease of their host more than six

TRICHINIASIS.

hours, the larvæ remain alive in water for a month, and will live for a long time in flesh which has become putrid. In this way, 'a carcass near a marsh or rivulet may communicate the parasites to the ruminants that drink the water, or to pigs.'

In the same year (1860) in which Virchow and Leuckart proved that by feeding an animal on flesh containing the T. S., intestinal trichinæ were produced, and watched the transformation of the young of the latter into muscular trichinæ, a very important corroborative medical case was observed and recorded by Zenker. In this case, the patient was a servant-girl, aged 20. and the principal symptoms were loss of appetite, prostration, violent pains and contraction of the limbs, and finally œdema, which, with a certain amount of pneumonia, terminated fatally in a month. After death, numerous larval trichinæ were found in her muscles, while the intestinal canal contained sexually mature worms. Three weeks previously, before the girl had become ill, she had assisted in killing pigs and making sausages. It was further ascertained that, a few days before her illness commenced, she had eaten some of the meat in a raw state. On examination, it was found that the pork (both hams and sausages) contained numerous encysted trichinæ. It was ascertained also that the butcher and several members of the girl's family (to whom she had probably given sausages) were attacked with symptoms similar to those which, in her case, proved fatal. How the pig acquires its trichinæ is unknown; but that the larval trichinæ contained in putrid flesh, etc., may easily gain admittance to the pig's alimentary tract, is a supposition entirely probable. Beet-root, earth-worms, moles, and rats have been suggested as their infectors; but on this subject see the advice given by the French commissioners, under TRICHINIASIS. The adult T. S. is liable to infest the intestinal canal of all animals in which the larvæ have been found in the muscles. In this category must be placed man, the dog, cat, rabbit, rat, mouse, mole, hedgehog, and badger. Whether birds ever contain trichinæ is doubtful; reptiles and fishes are free from this parasite.

TRICHINIASIS, *trīk-ĭ-nī'a-sīs*: diseased condition induced by ingestion of food containing *Trichina spiralis* in large quantity. The first recorded case in the human subject is that of Zenker (see TRICHINA SPIRALIS), but there can be no doubt that the disease has long existed, though its origin was previously unsuspected. (An obscure case had been noted, but not investigated, in England 1835.) The first symptoms in the human subject are loss of appetite, followed by nausea and a sense of fatigue, prostration, and general indisposition: this stage lasts about a week. Pain and stiffness of the limbs, accompanied by swelling of the face, and fever of a peculiar type, characterized by very frequent pulse, moderate thirst, and copious perspirations, now show themselves; the beginning of the second stage being thus synchronous with the migration of the trichina-brood into the muscles, there to become

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encysted. During this stage, pressure, or any attempt to move the parts under the control of the swollen muscles, is intensely painful, and even the normal respiratory movements cause such constant pain as to render sleep impossible. In severe cases, the patient lies on his back like a paralyzed person. The tongue presents much the same appearance as in ordinary gastric fever. The bowels are usually constipated, though in some of the worst cases there is continuous diarrhea. The swelling which began in the face disappears, and is replaced by swelling of the feet, which gradually rises to the trunk. In about the fourth week of the disease, the trichinæ may be regarded as permanently settled, and as having completed their destructive action on the muscles. This is the beginning of the third stage, characterized mainly by extreme weakness. The gastric symptoms abate, the appetite returns, and, in favorable cases, the muscular pains and swelling gradually diminish; while, in severe cases, this third stage is the most dangerous part of the disease; the diarrhea being severe, and accompanied with tenesmus, and often with involuntary discharges of the fæces and urine, while the skin exhibits extreme pallor, and is enormously distended with effused serum. Moreover, pneumonia often supervenes at this period. The fourth and last stage is that of convalescence. This may begin at the fifth week, or later, and may last from three weeks to three months. In mild cases, it is impossible to draw a definite line between this and the preceding stage. Death may occur at any period. It has been observed as early as the 5th, and as late as the 42d, day of the disease. A single trichinous pig, if its flesh is eaten without being previously submitted to such culinary processes as to destroy the vitality of the larval trichinæ, may establish a local epidemic of this disease. The most important of those epidemics have occurred in Germany, and are noticed by a German physician, Dr. Thudichum, in 'The Seventh Report of the Medical Officer of the Privy Council,' 1865. Of these, the second or great epidemic at Hettstädt was the most severe. It began 1863, Oct., and affected 158 persons, of whom 28 died. All these were found to have been eating trichinous pork, either entirely raw, or in the form of smoked or fried sausage, meat-balls, brawn, black-pudding, etc. The only safe rule is not to eat pork in any form unless it is known to be thoroughly cooked. In the United States the disease most often occurs among the German population, from eating raw ham, or sausages containing pork insufficiently cooked.

As soon as a case of suspected T. comes under the notice of the physician, attempts should be made to remove the mature worms from the intestine by active purgation. For this purpose, calomel, in scruple doses, is more serviceable than any other purgative. Two or three such doses should be given at intervals of 24 hours. No special directions can be given for treatment of the fever. If there is any appetite, the diet should be light but nourishing. Liebig's extract of meat has been found serviceable in keeping up

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the strength. The most effectual remedy for the sleeplessness has been the cold wet sheet, in which the patient should be wrapped repeatedly during the day. The preparations of opium only aggravate the discomfort. The other symptoms must be treated by the ordinary rules of therapeutics.

Considering the gravity of this disease, it would be important to be able to decide, during a pig's life, whether it were trichinous or not. On this point there is some difference of opinion; but Professors Delpech and Reynal, charged by the French govt. to report on this disease, assert that 'the animal, while living, shows no signs of the presence of trichinæ, nor can they be detected in the meat with an ordinary lens, but a powerful microscope renders them at once visible.' In Hanover, out of 25,000 pigs, 11 were found trichinous; in Brunswick, 16 were affected out of 14,000; in Blakenburg, 4 out of 700. The French commissioners assert that a temperature of 167° F. is sufficient to kill the parasites, and that meat thoroughly salted is also perfectly safe; they advise that smoke-dried sausages, though probably safe, should be well boiled. They further attribute the spread of the disease among pigs to the fact that they are foul feeders, and will eat any offal, such as the dead bodies of rats and other animals, which are known to be liable to the disease. They recommend farmers to be very cautious in feeding their pigs to avoid giving them flesh without first boiling it; to destroy rats and small carnivorous animals, and never to leave human or other excrements in places where pigs can reach them. Finally, they advise all experimenters to burn trichinous flesh when their investigation is completed, and not to throw it away; for a fragment of it might be eaten by a rat, the rat devoured by a pig, and the pig thus become the medium of the disease to man. In 1863, a trichinous pig from Valparaiso, killed on board a merchant-vessel on the high seas, caused the death of two of the crew; and there have been slight local trichinous epidemics in the United States. Probably T. is a common ailment in many countries; its symptoms, except in very severe cases, attracting no special notice, because of their similarity to those of rheumatic disease and acute febrile attacks. Helminthology, and the detection of parasites of all kinds, still require much investigation by the medical profession.

TRICHINOPOLY, *trich-in-öp'o-lī* (correctly, TRICHINAPALLI): city, cap. of the collectorate of T., in Brit. India; on the right bank of the Kaveri, 30 m. w. of Tanjur. The fort, which includes the old town, stands on the rugged slope of a steep granite rock, 500 ft. high. The walls of the fort, now demolished, had a circuit of 2 m.; and this area is inhabited by a dense population, dwelling in low, closely packed huts. The streets are crowded at all hours of the day with passengers, bullock-carts, and cattle. Beyond the walls is St. John's Church, containing the tomb of Bp. Heber, who was buried here 1826. The climate during eight months of the year is exceedingly hot; nevertheless T. is the headquarters of the s. division of the

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Madras army; there are several barracks, and the lines for the men and the officers' houses cover a space 6 m. in circumference. Cheroots are manufactured in large quantity, from excellent tobacco grown in the vicinity. Manufactures of hardware, cutlery, and jewelry, especially gold chains, harness, and saddlery, are extensively carried on. A railway to Madras was opened 1875.—Pop. (1881) 76,500; (1901) 104,721.—The *district* of T. has 3,561 sq. m.; pop. (1891) 1,519,306.

TRICHOCEPHALUS, *trīk-ō-sĕf'ā-lūs* [from Gr. *thrix*, gen. *trichos*, a hair; *cephale*, the head]: genus of intestinal worms, of which one species, *T. dispar* (described by the older writers, who mistook its head for its tail, as *Trichuris* and *Ascaris trichiura*), infests the human intestinal canal. Dr. Cobbold describes it as a small nematoid worm, the male $1\frac{1}{2}$ inches long, and the female fully 2 inches: it is characterized by an extremely long hair-like head and neck, occupying about two-thirds of the entire length. This parasite is comparatively rare in this country; while, according to Davaine, not less than one-half the inhabitants of Paris are infested by it. Its presence is attended with little or no inconvenience. Its development and mode of access into the body are not yet clear. Davaine finds that the eggs are not developed within the host's intestines, but are discharged *per anum*, in the immature condition in which they escape from the parent; and it further appears that after their expulsion a period of six months must elapse before embryonic formation commences. As in the more common instance of *Ascaris lumbricoides*, it is probable that they complete their development in open water, from which they are transferred to the human stomach.

TRICHOGENOUS, a. *trī-kōj'ĕ-nūs* [Gr. *thrix* or *tricha*, hair; *gĕnnāō*, I produce]: productive of hair.

TRICHOGYNE, n. *trīk'ō-jīn* [Gr. *thrix* or *tricha*, hair; *gunē*, a woman]: a receptive organ concerned in the sexual reproduction of certain algæ.

TRICHOLOGY, n. *trī-kōl'ō-jī* [prefix *tricho-*; Gr. *logos*, a discourse]: the study of human hair, with a view to the prevention of baldness. **TRICHOLOGICAL**, a. *trīk-ō-lōj'īk-al*, of or pertaining to trichology. **TRICHOLOGIST**, n. *trī-kōl'ō-jīst*, one who makes a scientific study of hair.

TRICHOME, n. *trīk'ōm* [Gr. *trichōma*—from *thrix* or *tricha*, hair]: in *bot.*, any structure, such as a hair, originating as an outgrowth of the epidermis.

TRICHOPTERA, n. *trī-kōp'tēr-ă* [Gr. *thrix* or *tricha*, hair; *ptera*, plu. of *pteron*, a wing]: a sub-order of neuropterous insects; the caddis-flies (see **CADDICE**). **TRICHOPTERAN**, a. *-tēr-ăn*, or **TRICHOP'TEROUS**, a. *-ūs*, hair-winged, as the caddis or case-worm flies.

TRICHORD, n. *trī'kawrd* [Gr. *treis*, three; *chordē*, a string]: a three-stringed lyre: **ADJ.** having three strings; said of an improved pianoforte, each note of which has three strings for the greater part of its compass.

TRICHOTOMOUS—TRICOCCOUS.

TRICHOTOMOUS, a. *trī-kōt'ō-mūs* [Gr. *tricha*, in three parts; *tomē*, a cutting]: divided into three parts or into threes. **TRICHOT'OMY**, n. *-mī*, division into three parts.

TRICK, n. *trik* [Dut. *trekken*, to pluck, to draw; *trek*, a trick: Ger. *streich*, a stroke, a trick: F. *tricher*, to cheat: in meaning 'to dress or adorn,' perhaps from W. *trec*, gear, harness]: any fraud or underhand scheme to impose upon others; something done to cheat or deceive; a vicious practice; practice or habit, as, 'he has a *trick* of winking;' a sly artifice by way of amusement; a frolic; the dexterous artifice of a juggler; a parcel of cards falling to a winner at one round of play: in *sailors' slang*, a spell of work, as at the helm; a turn; a shift: in *her.*, mode of representing arms by sketching them in outline, and appending letters to express the tinctures, and sometimes numerals to indicate the repetition of changes: V. to deceive; to impose on; to defraud; to dress or adorn fantastically, with *out*, as, 'she was *tricked out* in all her finery.' **TRICK'ING**, imp.: **ADJ.** cheating; deceiving; defrauding: N. in *OE.*, dress; ornaments. **TRICKED**, pp. *trikt*. **TRICKER**, n. *trik'ēr*, one who cheats; also **TRICK'STER**, n. *-stēr*. **TRICK'ERY**, n. *-ēr-ī*, artifice; deceit; the art of dressing up fantastically. **TRICK'ISH**, a. *-ish*, given to deception and cheating. **TRICK'ISHLY**, ad. *-lī*. **TRICK'ISHNESS**, n. *-nēs*, quality of being trickish or deceitful. **TRICK'Y**, a. *-ī*, artful; cunning. **TRICK'INESS**, n. *-ī-nēs*, quality of being tricky. **TRICKSY**, a. *trik'sī*, very artful; full of tricks; elegantly quaint. **TRICK'SINESS**, n. *-nēs*, artfulness; playfulness: quaintness.—**SYN.** of 'trick, n.': stratagem; fraud; wile; cheat; juggle; finesse; imposition; delusion; imposture; deception; sleight; artifice; subterfuge; antic.

TRICKLE, v. *trik'kl* [W. *treiglo*, to roll or trickle: Scot. *trigil*, to trickle: Dan. *trille*, to roll]: to flow in drops or in a small intermittent stream; to run gently down. **TRIC'KLING**, imp. *-klīng*: **ADJ.** flowing in a small gentle stream: N. the act of flowing in a small gentle stream. **TRICKLED**, pp. *trik'kld*.

TRICK-TRACK, n. *trik-trāk* [F. *trictrac*, backgammon]: a game at tables—resembling backgammon.

TRICLINIC, a. *trī-klīn'īk* [Gr. *tris*, thrice; *klīnō*, I bend]: having three unequal axes intersecting at oblique angles, applied to a system of crystallization; inclining or bending in three different directions; also called **TRICLINOHED'RIC**, a. *-klī-nō-hēd'rik* [Gr. *hedra*, a seat].

TRICLINIUM, n. *trī-klīn'ī-ūm* [L.—from Gr. *tris*, thrice; *klīnō*, I bend]: in *anc. Rome*, a couch to recline on at meals, usually for three persons; a dining-room furnished with couches on three sides. **TRICLI'NIARY**, a *-nī-ēr-ī*, pertaining to the ancient mode of reclining at table.

TRICOCCOUS, a. *trī-kōk'kūs* [Gr. *treis*, three; *kokkos*, a kernel or berry]: in *bot.*, having three one-seeded cells.

TRICOLOR—TRICYCLE.

TRICOLOR, or **TRICOLOUR**, n. *trī'kūl-ēr* [L. *tres*, three, and Eng. *color*: F. *tricolore*, of three colors]: a national banner of three colors. **TRI'COLORED**, a. *-kūl-ērd*, having three colors.—*Tricolor* is simply a flag in three colors; and most national ensigns are of this kind; but the applied sense limits it to flags having three colors in equal masses. The principal T. ensigns are: France—blue, white, red, divided vertically, blue next the staff. German empire—black, white, red, divided horizontally. Italy—green, white, red, divided vertically. Belgium—black, yellow, red, divided vertically. Holland—red, white, blue, divided horizontally. The tricolor took its rise at the outbreak of the French Revolution as the badge of the National Guard. The red and blue were selected as the arms of Paris, and the white was added, as the color of the army, to show the intimate union which should subsist between the people and the armed force.

TRICORNIGEROUS, a. *trī'kōr-nīj'ēr-ūs* [L. *tres*, three; *cornu*, a horn; *gero*, I bear]: having three horns.

TRICOSTATE, a. *trī-kōs'tāt* [L. *tres*, three; *costa*, a rib]: in *bot.*, three-ribbed.

TRICOUPIS, *trē-kō'pīs*, **SPIRIDION**: modern Greek statesman and author: 1791–1873; b. Missolonghi; son of a primate of that town. After completing his studies in France and England, he went to the Ionian Isles; but on the outbreak of the war of independence 1821, he hastened to enrol himself among the patriots. During the reign of King Otho, he was thrice sent to London as envoy-extraordinary; he was minister of foreign affairs and of public instruction (1843); vice-president of the senate (1844–49); and envoy-extraordinary to Paris (1850) on the occasion of the blockade of the ports of Greece by Great Britain.

T. had great reputation in his own country as orator and historian. His funeral oration on his friend Lord Byron, in the cathedral of Missolonghi, has been translated into most European languages. He published many other writings, political and religious; but his masterpiece is his History of the Greek Revolution (*Historia tes Hellēnikēs Epanastaseos*, Lond. 1853–4), praised for its accuracy, impartiality, and style.

TRICUSPID, a. *trī-kūs'pīd* [L. *tres*, three; *cuspid*, a point]: having three summits or points. **TRICUSPIDATE**, a. *-pī-dāt*, having three points; ending in three points.

TRICYCLE, *trī'sī-kl*: a 3-wheeled carriage: specifically, a Velocipede (q.v.) with three wheels, invented by James Starley, of Coventry, Eng., the 'father' of the Bicycle (q.v.). The rear wheels are of uniform size, and the front or pivotal wheel is generally much smaller. The T. is adapted particularly to ladies' use, though its use by men is increasing; and remarkable records have been made with it in Great Britain and in the United States. The best single T. record for 5 m. was made in London 1890, June 25, by G. Turner, 13 min. 50 $\frac{3}{4}$ sec.; and the best tandem T. in London 1890, June 20, by Wilson and Dangerfield, 13 min. 54 $\frac{1}{4}$ seconds.

TRIDACNIDÆ—TRIENNIAL.

TRIDACNIDÆ, *trī-dǎk'nī-dē*: family of lamelli-branchiate mollusks, having the shell open, the valves equal, the foot small, and furnished with a byssus. *Hippopus maculatus*, the BEAR'S PAW CLAM (q.v.), is prized for its beauty. *Tridacna gigas* is remarkable for great size, exceeding any other bivalve: the shell of a single specimen has been known to weigh more than 500 lbs., and to measure a yard or more in length. Some, 2 ft. or more, are often seen outside of restaurants in New York and other cities. The valves are sometimes used in Rom. Cath. churches for holy-water vessels. They are used also as an ornament for grottoes and fountains. They are deeply furrowed and beautifully grooved. This great mollusk is a native of the E. Indies, and is found in shallow water: it is used for food, and one suffices for a number of persons.

TRIDACTYLOUS, a. *trī-dǎk'tī-lūs* [Gr. *treis*, three; *daktūlos*, a finger or toe]: having three fingers or toes.

TRIDENT, n. *trī'dēnt* [F. *trident*, a trident—from L. *tridens* or *triden'tem*, having three teeth—from *tres*, three; *dens* or *dentem*, a tooth: It. *tridente*]: any instr. in the form of a fork with three prongs; a kind of sceptre or spear having three prongs; the sceptre of Neptune, the fabulous god of the sea; a figure frequent on ancient coins. **TRI-DENTED**, a. in *OE.*, having three teeth or prongs. **TRIDENTATE**, a. *trī-dēn'tāt*, in *bot.*, having three teeth, or tooth-like divisions.

TRIDENTINE, a. *trī-dēn'tīn* [L. *Triden'tum*, Trent]: pertaining to the celebrated Council of Trent, or to Trent—e.g., the 'Tridentine Profession': see TRENT, COUNCIL OF.

TRIDIMENSIONAL, a. *trī-dī-mēn'shūn-āl* [L. *tres*, three; and Eng. *dimension*]: having three dimensions; having length, breadth, and thickness.

TRIDING, n. *trī'dīng* [see RIDING]: in *OE.*, the third part of a county or shire—now retained in Yorkshire in the corrupt form *Riding* (q.v.).

TRIDUO, n. *trīd'ū-ō* [It.—from L. *triduum*]: in the *Rom. Cath. Chh.*, prayers through three days, followed by Benediction, as preparation for keeping a saint's day, or a means of obtaining some favor from God through intercession of one of his saints. **TRIDUUM**, n. *trīd'ū-ūm*, last three days of Lent; any three days kept in a special manner, as during a retreat, or as a preparation for a feast.

TRIDYMITE, n. *trī'dī-mīt* [Gr. *tridūmos*, triple]: a mineral similar to quartz, occurring in triple plates.

TRIED, pp.: see under TRY.

TRIENNIAL, a. *trī-ēn'nī-āl* [L. *triennium*, the space of three years—from *tres*, three; *annus*, a year]: continuing three years, as *triennial* parliaments; happening every three years. **TRIEN'NIALY**, ad. -*lī*. **TRIENNIAL ACT**, in *Eng. hist.*, an act of William and Mary, 1695, providing that no parliament should last longer than three years, repealed 1717.

TRIENS, n. *trī'ēnz* [L. the third part of an as, a third part]: in *law*, a third part; dower.

TRIER, n. *trī'ēr* [from TRY (which see)]: one who examines anything by a test or standard.

TRIESTE, *trē-ēs't'* (Ger. *Triest*, Slav. *Térst*): city, the most important seaport of the Austro-Hungarian empire, and the most considerable trading-town on the Adriatic; stands at the head of the Gulf of T., an arm of the Gulf of Venice; 90 m. s.w. of Laibach, on the Vienna and Trieste railway. It was an imperial free town; and attached and belonging to it is a territory of 46 sq. m., consisting of the slopes of the *Triestiner Karst*, which decline somewhat abruptly toward the Adriatic shore. The city of T., in which the pop. of the district is almost wholly massed, the other places being only small villages, consists of the old town, the new town, or Theresienstadt, and the two suburbs, Josefstadt and Franzenstadt. The old town, on the slope of a steep hill, surmounted by a castle (built 1680), forms about a fourth of the whole city, and is distinguished by its narrow streets and black walls. It contains the cathedral, an early Byzantine edifice of uncertain date, into whose walls stones bearing Roman inscriptions and carving have been built, and whose tower is said to rest on the foundation of a temple of Jupiter. The new town, with broad streets in regular parallelograms and with handsome houses, occupies the plain fronting the sea. Between these two divisions runs the *Corso*, chief thoroughfare of the city. The *Tergesteum*, in the new town, is a splendid modern edifice, containing a bazaar, a grand concert and ball room, exchange and reading rooms, and the offices of the Austrian Lloyd's, the largest establishment in Europe for sea-steamers. North, on the sea-shore, is the new and magnificent Lazaretto, with a harbor in which 60 vessels can perform quarantine at once. There are numerous churches for Greeks, Jews, Rom. Catholics, and Protestants. The pop. includes Germans, Americans, Italians, Greeks, Jews, Armenians, Dalmatians, etc.; but Italian is the prevailing language. T. was, till 1882, a free port; the harbor, with entrance uninterrupted by islands or sandbanks, is well protected. The manufactures are very extensive. There are more than 40 establishments for ship-building, and several soap-works and rope-works. Rosoglio, white-lead, and leather are manufactured, and wax-bleaching is carried on. The annual value of exports and imports is about \$150,000,000. A great agricultural exhibition was held at T. 1882, and an addition to the harbor was opened 1883.—Pop. (1880) 133,019—dist. 144,844; (1890) city 158,344—dist. 157,466.

T., anc. *Tergeste* or *Tergestum*, was important under the Romans, and appears in history first B.C. 51, when it was overrun and plundered by neighboring tribes. It was much improved by Augustus, and 1382 passed finally into the hands of Austria. It owes its prosperity chiefly to Emperor Charles VI., who constituted it a free port, and to Maria Theresa. Since 1816 T. has borne the title 'The Most Loyal of Towns.' It ceased to be a free town 1891.

TRIFACIAL—TRIG.

TRIFACIAL, a. *trī-fā'shal* [L. *tres*, three; *faciēs*, the face]: of or pertaining to the trigeminal or fifth cranial nerve, the great sensitive nerve of the head and face.

TRIFARIOUS, a. *trī-fā'rī-ūs* [L. *trifarīus*, of three sorts or ways]: in *bot.*, in three rows; looking in three directions.

TRIFID, a. *trī'fid* [L. *trifidus*, cleft into three parts—from *tres*, three; *fidi*, I have cleft; *findo*, I cleave]: in *bot.*, three-cleft; divided, as a leaf, into three segments which reach to the middle.

TRIFLE, n. *trī'fl* [OF. *trufle*, *truffle*, mockery, raillery—from *truffe*, a mock, a jest, a truffle (see **TRUFFLE**): It. *truffa*, a toy, an idle thing]: thing of little value or importance; small light cake or confection flavored, and soaked in wine or brandy, with syllabub poured over it: V. to act or talk lightly; to indulge in light or silly amusements; to spend or waste unprofitably; in *OE.*, to play with; to reduce to a trifle; make trivial. **TRI'FLING**, imp. *-flīng*: **ADJ.** treating serious things with lightness; of small importance or value; nugatory: N. employment about things of no importance; the treating of serious things with lightness. **TRIFLED**, pp. *trī'fld*. **TRI'FLER**, n. *-flēr*, one who wastes time idling, or who acts with levity. **TRI'FLINGLY**, ad. *-flīng-lī*. **TRI'FLINGNESS**, n. *-nēs*, the state of being trifling. **TO TRIFLE WITH**, to befool; to delude; to treat as of no estimation.

TRIFOLIATE, a. *trī-fō'li-āt*, or **TRIFO'LIOLATE**, a. *-lī-ō-lāt* [L. *tres*, three; *folium*, a leaf]: in *bot.*, having three leaves or leaflets from the same point. **TRIFO'LIUM**, n. *-lī-ŭm*, a genus of papilionaceous plants, commonly known as clovers or trefoils; common red clover is *Trifolium pratēn'sē*—the white Dutch clover, the shamrock of Ireland, is *T. repens*, ord. *Legumīnōsæ* (see **TREFOIL: CLOVER**).

TRIFORIUM, n. *trī-fō'rī-ŭm* [L. *tres*, three; *foris*, a door]: in *arch.*, the open gallery or arcade in the wall above the arches of the nave of a cathedral or church. It is between the central and side aisles, and is usually a dark gallery, being the wall-space against which the lean-to roof of the aisles rests. In the later styles the side-aisles are covered with independent roofs, allowing the T. arches to be filled with glass.

TRIFORM, a. *trī'fawrm* [L. *tres*, three; *forma*, a shape]: having a triple form or shape.

TRIFURCATE, a. *trī-fēr'kāt*, or **TRIFUR'CATED**, a. *-kāt-tēd* [L. *tres*, three; *furca*, a fork]: having three branches or forks.

TRIG, a. *trīg* [from *trick*, to dress, to decorate; W. *trec*, harness, gear]: true; tight; firm; trim; neat: V. to trick out. **TRIG'GING**, imp. **TRIGGERED**, pp. *trīg'd*. **TRIG'NESS**, n. *-nēs*, smartness; neatness.

TRIG, n. *trīg* [Dut. *trekken*, to pull, the root of *trigger*]: a wedge to prop a cask, or to stop a wheel: V. to skid a wheel.

TRIGAMOUS—TRIGON.

TRIGAMOUS, a. *trīg'ă-mūs* [Gr. *treis*, three; *gāmos*, marriage]: thrice married; pertaining to or characterized by trigamy: in *bot.*, having three sorts of flowers in the same flower-head, i.e., male, female, and hermaphrodite. **TRIG'AMY**, n. *-mĩ*, the state of having married three times; state of having three wives or three husbands living at the same time. **TRIG'AMIST**, n. *-mĩst*, one who has been thrice married; one who has three wives or three husbands living at the same time.

TRIGEMINAL, a. *trĩ-jēm'ĩ-năl* [L. *tres*, three; *gemĩnus*, double]: in *anat.*, pertaining to the fifth pair of cranial nerves, which have three main branches.

TRIGGER, n. *trīg'gēr*, in *OE.* **TRICKER**, n. *trĩk'kēr* [Dut. *trekker*, a trigger; *trekken*, to pull: Sw. *trycka*, to press]: the catch in a firearm which, when pulled, sets free the lock or clap for striking fire (see **LOCK**); a catch to hold the wheel of a carriage on a declivity; a wedge placed under the foot of the dog-shore, and withdrawn at the moment of launching a ship.

TRIG'LA: see **GURNARD**.

TRIGLYPH, n. *trĩ'glĩf* [Gr. *treis*, three; *gluphē*, a carving]: in *arch.*, an ornament consisting of a grooved tablet in the frieze of the Doric (q.v.) order, repeated at equal intervals; it is supposed to represent the ends of the beams in the original wooden temples. It is always divided into channels or flutes, with guttæ or drops below. **TRIGLYPHIC**, a. *trĩ-glĩf'ĩk*, or **TRIGLYPH'ICAL**, a. *-ĩ-kăl*, pertaining to triglyphs; containing three sets of sculptures.

TRIGON, n. *trĩ'gòn* or *trĩg'òn* [Gr. *treis*, three; *gōnĩa*, an angle]: a triangle: in *astrol.*, the junction of three signs of the zodiac. **TRIG'ONAL**, a. *-ò-năl*, or **TRIG'ONOUS**, a. *-nūs*, triangular; having three angles or corners: in *bot.*, having three angles, the faces being convex. **TRIG'ONAL-LY**, ad. *-lĩ*.

TRIGONIA--TRIGONOCEPHALUS.

TRIGONIA, *trī-gō'nī-a*: genus of mollusca, represented at the present day by only three species, natives of Australia, but remarkably abundant as fossils. More than 100 species have been described from strata between the Devonian and the Chalk inclusive, but not a single species is known from any Tertiary deposit. The shell is trigonal (whence the name), thick, and tuberculated, or ornamented with radiating or concentric ribs. The interior is nacreous. The external ligament is small and prominent, and the huge teeth are large, diverging, and transversely striated. The animal has a long, pointed, and powerful foot, with which it can make considerable leaps.

TRIGONOCARPUS, *trīg-ō-nō-kār'pūs*: common fossil fruit in the Coal-measures, occurring in all the strata except the underclays and limestones. Six or eight species have been established, differing in size and shape—some as small as a pea, others as large as a walnut. They are marked, when preserved in the round, with three longitudinal ridges, and from this character the name was derived. They have never been found attached to any plant. Dr. Hooker, from examination of several specimens which exhibit structure, has shown that they are not unlike the structure of *Salisburia*, drupe-bearing coniferous tree native of China and Japan, cultivated in Europe and America for its beauty, its singular leaves resembling those of a maiden-hair fern enlarged. The determination of the affinities of this fruit is important, as the existence of conifers in the Coal-measures was known from the occurrence in them of disk-bearing woody tissue; and the absence of linear leaves and cones makes it more probable that they belonged to the drupe-bearing division of the order. It is probable that the trunk, to which the generic name *Dadoxylon* has been given, and the cast of whose large pith is known as *Sternbergia*, had for its leaves the fern-like fossils named *Noggeruthia flabellata*, and *Trigonocarpus* for its fruit. Dr. Dawson has, however, recently referred some *Trigonocarpa* to *Sigillaria*, and he considers the anomalous organism called *Antholites* to be the bud-form of the fruit. He has never found them in contact with *Sigillaria*, and it is much more probable that this was a cryptogamous tree, and consequently had spores, and not seeds, for its fruit.

TRIGONOCEPHALUS, *trīg-ō-nō-sēf'ā-lūs*: genus of extremely venomous serpents, of family *Crotalidæ*, nearly allied to rattlesnakes, but having the tail terminated with a spine instead of a rattle. The head is covered with plates or shields; the dorsal scales are keeled. *T. rhodostoma* may be mentioned as an example. It is found in Java, and preys chiefly on frogs. *Cenchris*, *Craspedocephalus*, and other genera have recently been separated from *T.* The Moccasin Snake of the s. United States belongs to the genus *Agkistrodon*. One of the most dangerous serpents of the W. Indies is *Craspedocephalus lanceolatus*, called Fer-de-lance, which infests sugar-plantations and is a terror to man and beast.

TRIGONOMETRY.

TRIGONOMETRY, n. *trig'ōn-ōm'ě-trī* [Gr. *trigōnōn*, a triangle; *metron*, a measure]: in *math.*, the application of number to express the properties of angles or of circular arcs, as well as to exhibit the mutual relations of the sides and angles of triangles to one another. **TRIGONOM'ETER**, n. instrument for plotting angles and laying down distances on paper, and for solving problems in plane trigonometry by inspection. **TRIG'ONOMET'RICAL**, a. *-ōn-ō-mět'rī-kāl*, performed by or according to the rules of trigonometry. **TRIG'ONOMET'RICALLY**, ad. *-kāl-lī*. **TRIGONOMETRICAL SURVEY**, survey of a large extent of the earth's surface by means of a system of triangles, for the purpose of securing an accurate map or delineation of the country surveyed (see **SURVEYING**: **TRIANGULATION**: **ORDNANCE SURVEY**). —*Trigonometry* is literally measurement of triangles; but this definition, though expressing the scope of T. in its early stages, is now wholly inapplicable; as T., like geometry, has far exceeded its primitive limits, and is properly defined as the 'consideration of alternating or periodic magnitude.' T., within the limits of its earlier definition, is geometrical; its advance beyond these limits is due to the introduction of purely algebraic methods. The quantities with which geometrical T. has to deal are certain lines definitely placed with respect to an angle, and consequently varying with it. These lines, generally denominated *trigonometrical functions* of the angle, are the sine, cosine, tangent, cotangent, secant, and cosecant; and are represented in the accompanying figure. The angle BAC is placed at the centre of a circle, called the circle of reference; its *sine*, CD, is the perpendicular let fall from the extremity of one radius upon the other; the *cosine*, DA, is that part of the radius between the foot of the sine and the centre; the *tangent*, BE, is drawn at right angles to one radius to meet the other produced; the *secant*, AE, is the radius produced to meet the extremity of the tangent; the *cotangent*, FG, is drawn from the extremity of a radius at

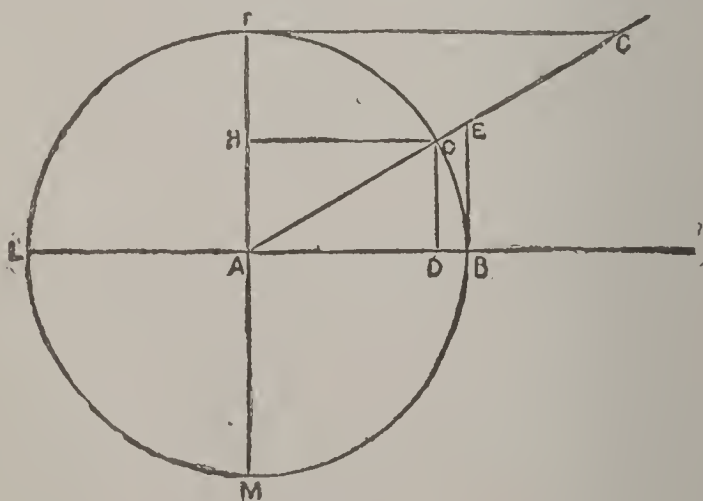


Fig. 1.

right angles to one of the former, to meet the other produced; and the *cosecant*, AG, is the radius produced to meet the extremity of the cotangent. Other functions, as the *versed sine*, DB, which is the distance from B to the foot of the sine, and its counterpart, the *covered sine*, FH, have

been occasionally introduced and defined, but are of no practical use. EAF, the angle which must be added to BAC to make up a right angle, is called the *complement* of BAC; and CAL, the defect of BAC from two right angles, is called its *supplement*; and, by inspection of the figure, it is evident that the sine of BAC, CD, is equal to AH, the cosine of its complement; that the cosine of BAC, AD, is equal to CH, the sine of its complement; and that generally any function of an angle is the co-function of its complement, and *vice versâ*; also, that CD, the sine of CAB, is also the sine of its supplement; AD, the cosine of CAB, is the cosine of its supplement; and that generally the function of an angle is the function of its supplement. If a right angle be added to BAC, then we have the triangles ADC, ABE, shifted so as to be in the same relative position to AF as they now are to AB, and each line is consequently at right angles to its former position; hence the sine of BAC is the cosine of $(90^\circ + \text{BAC})$, and similarly of the others. By an extension of this process of investigation, we arrive at the general conclusions, that *if an angle be added to or taken from one or an odd number of right angles, the function of the original angle is the co-function of the one so derived*; and that *if an angle be added to or taken from an even number of right angles, the functions of the original angle are the functions of the derived one*. But since a function of an angle is the same function of its supplement, a knowledge of the function would not enable us to determine to which of the two angles it belonged unless we had some knowledge of more than the mere magnitude of the function. This desideratum is supplied in the following manner: B is taken as the zero-point of reckoning; the radius BA, which is thus supposed to be fixed, is one of the bounding lines of every angle, the other side being supposed to move in the direction BFL, as the angle increases. Let the radius AC be supposed to sweep round the circle in a left-hand direction (*viz.*, toward F); then, as it approaches F, the sine CD increases, till, on reaching F, the sine coincides with the radius: passing F, and moving toward L, the sine diminishes, till, reaching L, it becomes zero. Continuing its progress round the circle, the angle BAC becomes *re-entrant* (*viz.*, greater than two right angles); and its sine again increases, becoming equal to the radius at M, and diminishing in the fourth quadrant till it becomes zero at B. While the angle increased from B to L, the sine was drawn *downward*; for the other half of the revolution, it was drawn *upward*; hence, in the first and second quadrants the sine is said to be *positive*, and in the third and fourth *negative*, the position of a function in the first quadrant being adopted as the standard.

Angle.	Sine.	Cosine.	Tangent.
0° to 90°	inc. 0 - R, +	dec. R - 0, +	inc. 0 - ∞, +
90° to 180°	dec. R - 0, +	inc. 0 - R, -	dec. ∞ - 0, -
180° to 270°	inc. 0 - R, -	dec. R - 0, -	inc. 0 - ∞, +
270° to 360°	dec. R - 0, -	inc. 0 - R, +	dec. ∞ - 0, -

TRIGONOMETRY.

Angle.	Secant.	Cotangent.	Cosecant.
0° to 90°	inc. R - ∞, +	dec. ∞ - 0, +	dec. ∞ - R, +
90° to 180°	dec. ∞ - R, -	inc. 0 - ∞, -	inc. R - ∞, +
180° to 270°	inc. R - ∞, -	dec. ∞ - 0, +	dec. ∞ - R, -
270° to 360°	dec. ∞ - R, +	inc. 0 - ∞, -	inc. R - ∞, -

The above table shows the variation (increase or decrease, and between what limits, as well as the sign affecting it) of each of the functions as the angle increases.

We here observe that all the functions increase and decrease alternately as the angle of which they are the functions passes from one quadrant to another; also that the sine and cosecant are affected by the same signs, as also are the cosine and secant, and tangent and cotangent.

Again, from fig. 1 we obtain, from the properties of right-angled and of similar triangles, the following relations between the functions. $\text{Sin.}^2 + \text{Cos.}^2 = \text{R}^2$, $\text{Tan.}^2 + \text{R}^2 = \text{Sec.}^2$, $\text{Cot.}^2 + \text{R}^2 = \text{Cosec.}^2$, $\text{Tan.} : \text{R} :: \text{Sin.} : \text{Cos.}$, $\text{Sec.} : \text{R} :: \text{R} : \text{Cos.}$, $\text{Cot.} : \text{R} :: \text{Cos.} : \text{Sin.}$, $\text{Cosec.} : \text{R} :: \text{R} : \text{Sin.}$, and $\text{Cot.} : \text{R} :: \text{R} : \text{Tan.}$ From these eight relations, we easily obtain any one function in terms of any other, both as regards its magnitude and sign.

The reason why the circle and its radius are employed in the definition of the functions is, that we may obtain some invariable standard by which to estimate them; for while, as the angle increases from 0° to 360°, its functions are in a state of constant change, their standard of reference, the radius, remains the same. For greater simplification, the radius is taken as unity, and the relations become $\text{sin.}^2 + \text{cos.}^2 = 1$, $\text{tan.}^2 + 1 = \text{sec.}^2$, $\text{cot.}^2 + 1 = \text{cosec.}^2$, and (by the reduction from the proportional to the divi-

sional form of the other five relations) $\text{tan.} = \frac{\text{sin.}}{\text{cos.}}$, $\text{sec.} =$

$\frac{1}{\text{cos.}}$, $\text{cot.} = \frac{\text{cos.}}{\text{sin.}}$, $\text{cosec.} = \frac{1}{\text{sin.}}$, $\text{tan.} = \frac{1}{\text{cot.}}$; the various functions being expressed in terms of the assumed unit.

Thus, in the right-angled triangle ABC (fig. 2), if AC be radius, BC = sin., and AB = cos., of the angle A; but if the radius be assumed as unity,

$$\text{sin. A} = \frac{\text{BC}}{\text{AC}}, \text{cos. A} = \frac{\text{AB}}{\text{AC}}, \text{and}$$

$$\text{similarly, from the above relations, } \text{tan.} = \frac{\text{BC}}{\text{AB}}, \text{sec.} = \frac{\text{AC}}{\text{AB}},$$

$$\text{cot.} = \frac{\text{AB}}{\text{BC}}, \text{and cosec.} = \frac{\text{AC}}{\text{BC}}; \text{ and in algebraic trigonometry these latter are the definitions of the trigonometrical functions.}$$

The only angular functions which geometry enables us to determine with accuracy are those belonging to the

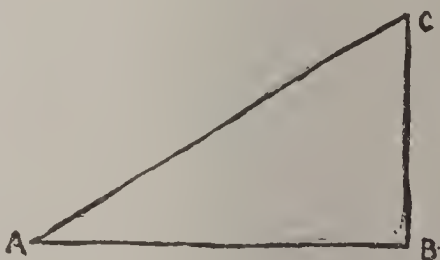


Fig. 2.

TRIGRAPH—TRIHEDRON.

angles of an equilateral triangle (Euc. I. 1), an isosceles right-angled triangle (Euc. II. 9), and an isosceles triangle which has each of the angles at its base double of the third angle (i.e., base angles each 72° , vertical angle 36°) (Euc. IV. 10); and from these, by means of a proposition (demonstrated in all text-books on the subject) which determines the functions of the angle $(A + B)$ —from knowledge of the functions of A and of those of B ; and also, as a corollary to the preceding, the functions of $2A$, $4A$, $8A$, etc., and inversely of $\frac{1}{2}A$, $\frac{1}{4}A$, etc., from knowledge of those of the angle A —have been obtained and tabulated the functions of all angles from $1'$ to 45° , the functions of angles from 45° to 360° being, as is evident from the above remarks respecting complementary and supplementary angles, merely repetitions of these.

The relations between the angles and sides of a triangle (fig. 3) are three in number, and are obtained from simple geometric considerations; they are: (1) $AB : AC :: \sin. C :$

$$\sin. B; (2) \cos. B = \frac{AB^2 + BC^2 - AC^2}{2 AB \cdot BC}; (3) AB + AC :$$

$$AB - AC :: \tan. \frac{1}{2}(B + C) : \tan. \frac{1}{2}(B - C).$$

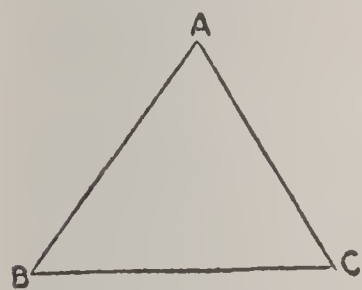


Fig. 3.

relations, in conjunction with the fact that the three angles of a triangle collectively amount to 180° , it is possible, having given any three (one being always a side) of the six elements (three sides and three angles) of a triangle, to determine the other three. It is this that constitutes T. in its primitive and elementary form. If the tri-

angles be right-angled, only the first relation, and the property of the sides of a right-angled triangle, are necessary for the complete solution.

Algebraic T. is one of the most important branches of analysis, but is too extensive and varied to be even sketched here; suffice it to say, that in it the trigonometrical functions are considered not as geometrical magnitudes, but as numerical quantities having certain relations to each other, and that the circle as well as the angular functions are treated as multiples or sub-multiples of the radius. Many important results, such as the approximate estimation of the circumference of a circle, the completion of the solution of cubic equations, etc., have been obtained by its means; and a thorough knowledge of its modes and results is necessary to acquaintance with higher mathematics.

Spherical T. is plane T. applied to spherical triangles.

TRIGRAPH, n. *trī'grāf* [Gr. *treis*, three; *graphō*, I write]: a combination of three letters to express one sound; a triphthong.

TRIGYN, n. *trī'jŭn* [Gr. *treis*, three; *gunē*, a woman]: in bot., a plant having three styles.

TRIHEDRON, n. *trī-hē'drŏn* [Gr. *treis*, three; *hedra*, a seat, a base]: a figure having three equal sides. TRIHEDRAL, a. *-drāl*, having three equal sides.

TRIJUGATE, *trī'jû-gât*, or TRIJUGOUS, a. -*gûs* [L. *tres*, three; *jugum*, yoke]: in *bot.*, having three pairs of leaflets.

TRIKHALA, or TRIKALA, *trē kâ-lâ*: town of the kingdom of Greece, 33 m. w.s.w. of Larissa; on the slope of a hill. It manufactures cotton and woolen stuffs and has large transit-trade. The neighboring plains, watered by the Salambria (anc. *Peneus*), are rich in all sorts of fruits. —T. is the *Trikka* of Homer, and was celebrated for its temple of Æsculapius. T. was ceded to Greece, with s. Thessaly, 1881.—Pop. (1881), 5,563.

TRILAMELLAR, a. *trī-lām'êl-lér* [L. *tres*, three; *lamella*, a small plate of metal]: in *bot.*, three-layered: applied to a compound stigma having three divisions flattened like bands.

TRILAMINAR, a. *trī-lām'î-nér* [L. *tres*, three; *lamina*, a plate, a leaf]: consisting of threefold laminæ or layers of cells, as the blastoderm.

TRILATERAL, a. *trī-lăt'ér ăl* [L. *tres*, three; *latus*, a side, *latêris*, of a side]: having three sides, as a triangle. TRILATERALLY, ad. -*ăl-lî*.

TRILETTO, n. *trē-lêt'ô* [It.]: in *mus.*, a short trill.

TRILINGUAL, a. *trī-lîng'gwăł*, or TRILIN'GUAR, a. -*gwêr* [L. *tres*, three; *lingua*, a tongue]: consisting of or expressed in three languages.

TRILITERAL, a. *trī-lîťér-ăl* [L. *tres*, three; *litêra*, a letter]: consisting of three letters: N. a word consisting of three letters. TRILITERALISM, n. -*îzm*, the system in the Semitic languages according to which the roots of the words have their three fundamental letters; the use of triliteral roots.

TRILITH, n. *trī'lîth*, TRILITHON, n. *trī'lîth-ôn* [Gr *treis*, three; *lithos*, a stone]: in *archæol.*, a monument, probably sepulchral, either standing alone or part of a larger work, and consisting of three stones, two uprights, connected by a continuous impost or architrave: the best known examples are at Stonehenge, England. TRILITHIC, a. *trī-lîth'îk*, of or pertaining to a trilith; having the character of a trilith.

TRILL, v. *trîł* [Sw. *trilla*, to roll: Dan. *trille*, to roll, to trundle: It. *trillare*, to quaver with the voice in singing: W. *treigl*, a rolling over]: to utter or play with a quavering or tremulous vibration; to sound in tremulous or quavering vibrations; in *OE*, to trickle; to roll: N. a shaking or quavering of the voice in singing; a quavering or tremulous sound. TRIL'LING, imp.: ADJ. quavering; tremulous. TRILLED, pp. *trîłd*.

TRILLIACEÆ, *trîł-lî-ă'sê-ê*: small nat. order of plants, belonging to the class Dictyogens (q.v.) of Lindley; herbaceous, with tubers or root-stocks, whorled leaves, hermaphrodite flowers; perianth of six leaves, the three inner leaves sometimes colored; six, eight, or ten stamens, the filaments extending beyond the anthers in awl-shaped points; the ovary free, 3-5-celled, with numerous ovules; the fruit succulent. The order is characterized by narcotic properties. The genus *Paris* (q.v.) belongs to it.

TRILLIBUB—TRILOBITA.

TRILLIBUB, n. *tril'li-büb*: in *OE.*, tripe; a trifle; anything worthless.

TRILLION, n. *tril'yün* [*L. tres*, three, and *Eng. million*: *F. trillion*]: in the *Eng. system of notation*, a number represented by the third power of a million; a million of millions of millions, represented by 1, followed by eighteen ciphers; in the *F.* and *It. systems*, now generally used in the United States, a million millions, or a thousand billions, represented by 1, followed by twelve ciphers.

TRILLIUM, *tril'li-üm* [word coined by Linnæus from *Lat. tri-*, threefold]: genus of *Liliaceæ*, of which 14 Amer. species are known, and 2 Asian. The name has reference to the ternary arrangement running through the calyx, styles, and leaves. The species of *T.* are curious and interesting plants, having a thick, short, fleshy root-stock, and unbranched stem topped with a whorl of 3 broad, deep green leaves, from which rises the beautiful sessile flower. The Purple *T.* is popularly called Indian Balm, Nosebleed, etc. In *T. erythrocarpum* (the Painted *T.*), deep-red lines mark the white petals. In *T. grandiflorum* of the e. states, and in *T. ovatum* of Cal., the white petals turn rose-color.

TRILOBATE, a. *trî-lō'bāt*, or **TRILOBED**, a. *trî'lōbd* [*Gr. treis*, three; *lōbos*, a lobe]: having three lobes.

TRILOBITA, *trî-lō-bi'ta*: the trilobites, an order of fossil crustacea entirely confined to the paleozoic rocks. They are abundant specially in the Silurian period, and disappear in the lower members of the Coal-measures.

The body was covered with a chitinous shield, which consisted of a large united cephalic shield, a variable number of body segments, and a tail or pygidium, composed of a number of joints, more or less anchylosed. The eyes were sessile and compound. The lenses are frequently beautifully preserved, and in some species are so large that they can easily be seen with the naked eye. In *Asaphus caudatus*, each eye had at least 400 facets; and in the large *A. tyrannus* it is estimated that there are no fewer than 6,000. In some species a bifurcated plate has been found in the region of the mouth, which is believed to be a labrum; but no antennæ were detected until within a few years, when limbs were discovered by carefully made sections of the fossil. The members of the order varied greatly in size, some species being scarcely larger than a pin's head, while others, like *Asaphus gigas*, attained a length of 18 inches. It is probable that many named species may be only larval or transition forms of others. The minute *Agnosteus* is frequently found in such quantities as to indicate that it lived in shoals, as if it were the larval form of some large trilobite. Trilobites have a remarkable resemblance to an embryonic stage of the living King-crab; and the larval King-crab (Horseshoe Crab) no less resembles what is regarded



Asaphus tuberculatus.

TRILOBITE—TRIM.

as a larval trilobite, *Trinucleus*. They are now classed as orders of a crustacean sub-class, *Palaëocarida*. More than 400 species have been described, and grouped into 50 genera.

TRILOBITE, n. *trī'lō-bīt* [Gr. *treis*, three; *lōbos*, a lobe]: in *palaëon.*, one of an extensive family of paleozoic crustaceans, the **TRILOBITIDÆ**, n. plu. *trī'lō bīt'ī-dē*, deriving their name from the three-lobed aspect of their bodies (see **TRILOBITA**). **TRILOBITIC**, a. *trī'lō-bīt'ik*, like or pertaining to a trilobite.

TRILOCULAR, a. *trī-lōk'ū-lēr* [L. *tres*, three; *locūlus*, a little place]: in *bot.*, having three cells or loculaments.

TRILOGY, n. *trī'lō-jī* [Gr. *treis*, three; *logos*, a discourse]: a series of three dramas, each complete in itself, the whole, however, forming but one poetical picture, as in Shakespeare's *Henry VI.*; in the *Athenian drama*, in which the term originated, *trilogy* was not only used in the above sense, but also applied to the exhibition of three tragedies on some special occasion, each tragedy being quite distinct in subject. A satyric drama was customarily added as a termination, whence the whole was sometimes termed a *tetralogy*. Every tragic poet that wished to take part in a poetic contest had to produce a T. with a satyric drama at the Dionysiac, Lenæan, and Anthesteriac festivals. We possess only one perfect specimen of the classic T.—the *Oresteia* of Æschylus, which embraces the *Agamemnon*, the *Choëphoræ*, and the *Eumenides*. Beaumarchais's three comedies form a comic trilogy of the kind first mentioned; Schiller's *Wallenstein* is a trilogy; and so are Swinburne's *Chastelard*, *Bothwell*, and *Mary Stuart*.

TRIM, a. *trīm* [AS. *trum*, steadfast; *trymian*, to establish, to set in order]: compact; firm; nice; neat; tidy; dressed; in good order; having everything necessary: N. ornaments; trappings: proper state of dress; adjustment, arrangement, or condition as regards orderliness or balance; the state of a ship in regard to her cargo, ballast, masts, etc., by which she is well prepared for sailing: V. to put in due order for any purpose; to decorate; to dress; to clip, as the hair; to lop, as trees; to prepare, as a lamp; to dress timber; to make neat or tidy; to put a vessel in due order for sailing by adjusting the cargo, ballast, etc., that she may sit well in the water; to fluctuate between parties so as to appear to favor each in turn. **TRIMMING**, imp.: N. necessary or ornamental appendages, as lace, ribbons, and the like; the act of one who trims; inconstancy. **TRIMMINGS**, n. plu. the immediate surroundings of a dish at table, as bacon and *trimmings*. **TRIMMED**, pp. *trīmd*. **TRIMMER**, n. *-mēr*, one who trims; one who fits ornaments or arranges them; one who arranges the coal in a collier; one who adjusts his position to accord more or less with the different sides in a contest; a time-server (see below); a flat brick arch for supporting a hearth in an upper floor of a building; a piece of wood in a wall to support the ends of a joist or rafter. **TRIMLY**, ad. *-lī*, neatly; in good order. **TRIMNESS**, n. *-nēs*, neatness; snugness; state of being in

TRIMEROUS—TRIMMING.

good order. TRIM'MINGLY, ad. -mǐng-lǐ, in a trimming manner. IN TRIM, in proper order. To TRIM IN, in *carpentry*, to fit, as a piece of timber into other work. To TRIM UP, to dress; to put in order.—SYN. of 'trim, v.': to dress; decorate; shave; clip; lop; prune; adjust; balance.

TRIMEROUS, a. trī'mēr-ŭs [Gr. *treis*, three; *meros*, a part]: in *bot.*, composed of three parts—a *trimerous* flower having its organs in three or multiples of three.

TRIMETER, n. trīm'ĕ-tēr [Gr. *treis*, three; *metron*, a measure]: a poetical division of verse, consisting of three measures. TRIMETRIC, a. trī-mĕt'rik, or TRIMET'RICAL, a. -rī-kāl, consisting of three poetical measures; in *min.*, applied to crystals having the axes of three kinds.

TRIMETHYLAMINE, n. trī'mĕ-thĭl'ă-mĭn [Gr. *treis*, three, and Eng. *methyl*, which see]: in *chem.*, volatile alkaline substance having the smell of stock-fish, obtained from herring-brine, etc., as a colorless gas, readily soluble in water, and having strong alkaline reaction. With acids it readily forms soluble salts. It occurs in large quantity in the pickle in which herrings (especially their roes) have been lying, and in the spirit in which old anatomical preparations have been long suspended; and (strange as it may appear) it imparts to the leaves of *Chenopodium olidum* their atrocious odor, and to the flowers of *Crategus oxyacantha* (the common hawthorn) their agreeable fragrance. It is obtained by distillation from ergot of rye, from guano, the juice of the leaves of red beet-root, and from putrid yeast, and has been detected in small quantity in human urine and in the blood of the calf. It may be formed artificially by action of iodide of methyl on dimethylamine.

TRIM'MER: a time-server; one who tries to keep in with both sides or parties. T. was a political term in use in the reigns of Charles II. and William III., originally applied to certain politicians of Charles's time, of whom the chief was Charles Montagu, Earl of Halifax, who held opinions half-way between the extreme whigs and tories. Halifax adopted the name T. as a title of honor, maintaining that everything good was a medium between extremes.—The same term was applied more generally by Dryden and other writers of the same period to all who, professing to be friends to monarchy, were at the same time enemies to the Duke of York, and who were equally obnoxious to the court and to the fanatical republicans.

TRIMMER, trīm'mēr, SARAH (KIRBY): English author: 1741, Jan. 6—1810, Dec. 15; b. Ipswich. She had the advantage of acquaintance with Dr. Samuel Johnson, with whom she was a favorite. She was married 1762. Her publications, beginning 1780, included many school-books and other books for the young, on natural history, on scriptural study, etc.; and had much popularity. She also edited magazines for family instruction. Her *History of the Robins* is still read.

TRIMMING, TRIMNESS: see under TRIM.

TRIMORPHIC—TRINCOMALEE.

TRIMORPHIC, a. *trî-mŏr'fîk* [Gr. *treis*, three; *morphê*, form, shape]: in *bot.*, having three forms of flowers in one species. **TRIMORPHISM**, n. *-fîzm*, the character and condition of a trimorphic plant.

TRIMŪRTI, *trê-mŏr'tê* [from Skr. *tri*, three; *mŭrti*, form]: the Hindu triad, *Brahma*, *Vishn'u*, and *S'iva*, viewed as an inseparable unity, though three in form. The *Padma-Purân'a* (see PURÂN'A), which, being a Purân'a of the Vaishn'ava sect, assigns to Vishn'u the highest rank in the T., defines its character in the following manner: 'In the beginning of creation, the great Vishn'u, desirous of creating the whole world, became threefold: creator, preserver, and destroyer. In order to create this world, the supreme spirit produced from the right side of his body himself as Brahma; then, in order to preserve the world, he produced from the left side of his body Vishn'u; and, in order to destroy the world, he produced from the middle of his body the eternal S'iva. Some worship Brahma, others Vishn'u, others S'iva; but Vishn'u, one, yet threefold, creates, preserves, and destroys; therefore, let the pious make no difference between the three.' And the *Matsya-Purân'a*, where speaking of *Mahat*, or the intellectual principle of the Sâmkhya philosophy (see SÂMKHYA), says that 'Mahat becomes distinctly known as *three* gods, through the influence of the three qualities, goodness, passion, and sin; being one person and three gods—viz., Brahma, Vishn'u, and S'iva.' Apart, therefore, from sectarian belief, which makes its own god the highest, and gives him the attributes also of the other gods, *Trimŭrti* implies the unity of the three principles of creation, preservation, and destruction, and as such belongs more to the philosophical than to the popular belief. When represented, the T. is one body with three heads: in the middle, that of Brahma; at its right, that of Vishn'u; and at its left, that of S'iva. The symbol of the T. is the mystical syllable *om*, where (*o* being equivalent to *a + u*) *a* means Brahma; *u*, Vishn'u; and *m*, S'iva. See OM.

TRINCOMALEE, *trîng-ko-ma-lê'*: seaport town and magnificent harbor on the n.e. coast of Ceylon; 8° 34' n., and 81° 12' e.; on a bold peninsula, which divides the inner and outer harbors. It is a place of great antiquity, but its ancient renown was due more to religious than political or geographical considerations; for here the Malabar invaders of Ceylon built one of their most sacred shrines—the 'Temple of a Thousand Columns,' to which pilgrims flocked from all India. This celebrated shrine was demolished by the Portuguese, who fortified the heights with the materials from it, 1622. It was held next by the Dutch; but in 1672, during the rupture between Louis XIV. and the United Provinces, the French took T., which was abandoned by the Dutch in a panic. In 1782 the French admiral, in the absence of the Brit. commander, took possession of the fort, and the English garrison retired to Madras. It was restored to the Dutch the following year, and they retained it until the capture of Ceylon by the British 1795. The modern town, excluding the official buildings, is of poor

TRINCOMALEE WOOD—TRINIDAD.

appearance. There are Hindu temples in barbarous taste, and religious festivals and processions to which a similar epithet may be applied.—The Bay of T. is land-locked, and presents a scene of tranquil beauty; its fine expanse of water is still as an inland lake, and equally sheltered. It is the principal naval station in the Indian seas. ‘On comparing this magnificent bay,’ says Sir J. E. Tennent, ‘with the open and unsheltered roadstead of Colombo and the dangerous and incommodious harbor of Galle, it excites an emotion of surprise and regret that any other than Trincomalee should have been selected as the seat of government and the commercial capital of Ceylon. As a harbor, T. is renowned for its extent and security; but its peculiar superiority over every other in the Indian seas consists in its perfect accessibility to every description of craft in every variation of weather.’ The mean temperature for the year at T. is $81^{\circ}4$.—Pop. (1881) 10,180; (1891) 11,411.

‘TRINCOMALEE’ WOOD: see HALMALILLE.

TRINE, a. *trīn* [L. *trīnus*, threefold—from *tres*, three]: threefold: N. in *astrol.*, the aspect of planets 120 degrees distant from each other. TRINAL, a. *trī'nāl*, threefold.

TRINE-IMMERSION: in baptism in certain portions of the primitive church, the dipping a person three times beneath the surface of the water at the pronouncing of each of the three names of the Holy Trinity. When circumstances rendered baptism by affusion necessary, the affusion also was trine as it is at the present day.

TRINERVIS, a. *trī-nēr'vīs*, or TRINER'VATE, a. *-vāt*, and TRINERVED, a. *trī'nérvd* [L. *tres*, three; *nervus*, a nerve]: in *bot.*, having three ribs springing together from the base.

TRING, *trīng*: town of Hertfordshire, England; 32 m. n.w. from London, near the right bank of the Ouzel, branch of the Ouse. It is neatly built, has manufactures of silk, canvas, and straw-plait, and is a station on the London and Northwestern railway.—Pop. (1881) 4,354.

TRIN'GA: see SANDPIPER.

TRINGLE, n. *trīng'gl* [F. *tringle*, a curtain-rod]: a curtain rod; in *arch.*, a name common to several little square members or ornaments, particularly one fixed over a triglyph.

TRINIDAD, *trīn-ī-dād'*, Sp. *trē-nē-tháth'*: island belonging to Great Britain, most southerly of the W. India islands, lat. 11° n.; about 50 m. long, breadth 30 to 35 m.; 1,755 sq. m. It is separated from the mainland (Venezuela) by the Gulf of Paria; and the extreme points on the w. coast are only 13 and 9 m. respectively from the continent. The Dragon's Mouth entrance, to the n., is the deepest channel to the harbor; and the s., or Serpent's Mouth, is shallow, owing to the deposits brought down by the Orinoco. The gulf itself is shoaling up from the same cause. The aspect of the island of T. is different from that of the Caribbean Islands generally: the mountains are not so lofty, and they extend e. and w. along the n. coast, clothed

TRINIDAD.

with stately forests, and their margins fringed with overhanging mangroves dipping into the sea. From the double-peaked mountain Tamana are seen the lovely and fertile valleys and plains with which the other part of the island abounds. The island has several good harbors and some rivers.

The chief town and cap., Port of Spain (pop. 54,100), is one of the finest towns in the W. Indies. It was originally of wood, but was burned down 1808, and has been rebuilt of the good stone procured in the neighborhood. The streets are long, wide, well paved, clean, and shaded with trees. There is another town, called San Fernando (pop. 7,000); and two or three pretty villages.

A remarkable phenomenon is a pitch lake near the village of La Brea, composed of bituminous matter floating on the surface of fresh water; about 3 m. in circumference and 80 ft. above sea-level: the pitch from this lake yielded a revenue 1890 of \$120,255. The mineralogy of the island is little known. The soil is very productive. The climate is hot and moist; the thermometer ranges from 75° to 85°, even 90°; and the rain-fall is about 75 inches.—In 1890 the revenue was \$2,277,196; expenditures \$2,309,686. imports \$10,929,621; exports \$10,592,039. The trade with the United States was: imports \$2,082,816, exports \$3,523,500. Principal exports were: coffee 12,597 lbs.; asphalt, raw 68,201 tons, boiled 10,640—total 78,841 tons; cocoa-nuts 12,739,904; bitters and liquors 43,266 gals.; sugar 115,239,227 lbs.; molasses 2,024,884 gals.; rum 20,469 gals.; and cocoa 21,552,593 lbs. The entrances were 2,144 vessels of 141,355 tons; clearances 2,135 vessels of 142,998 tons. T. began shipping oranges, limes, and bananas to New York 1889.

T. is a crown colony, ruled by a gov., an executive council of 3, and a legislative council of 13 members. The first railway in T., from Port of Spain to Arima, was opened 1876.—Pop. (1871) 109,638; (1881) 155,128; (1890) 208,030, of whom 44,500 were natives of India, besides 24,500 born of E. Indian parents; (1901) 255,148.

T. was discovered by Columbus 1496, July 31, and thus named by him because three mountain summits were first seen from the masthead when discovered; but no permanent establishment was founded there until 1532 by the Spaniards. In 1783 it fell into the hands of the British, who were confirmed in possession of it 1802.

TRINIDAD, *trĭn-ĭ-dăd'*: city, cap, of Las Animas co., Colo.; on the Purgatory river, and on the Atchison, Topeka and Santa Fé, the Denver and Rio Grande, and the Denver, Texas and Fort Worth railroads; 210 m. s. of Denver, 650 m. w.-by-s. of Kansas City, Mo. It is in a grazing and agricultural region, is surrounded by extensive beds of bituminous coal, and is an important wool and hide market. It contains 9 churches, Rice Institute, acad., graded schools, Rom. Cath. convent, several hotels, 2 national banks (cap. \$200,000), 2 savings banks (cap. \$50,000), and 2 daily and 3 weekly newspapers.—Pop. (1880) 2,296; (1890) 5,523; (1900) 5,345.

TRINITY.

TRINITY, *n.* *trĭn'ĭ-tĭ* [F. *Trinité*, the Trinity—from mid. L. *trīnĭtas* or *trīnĭtātem*, a triad, the Trinity—from L. *trīnus*, threefold—from *tres*, three]: the eternal threefold distinctions—the Father and the Son and the Holy Spirit—in the One and only God (see below). TRIN'ITA RIAN, *a.* *-tū rĭ-ān*, of or pertaining to the Trinity; pertaining to the doctrine of the Trinity: *N.* one who believes in the doctrine of the Trinity. TRIN'ITA RIANISM, *n.* *-ĭzm*, the doctrine that there are three distinct persons in the Godhead, yet but one God. TRINITY SUNDAY, the Sunday next after Whitsunday. TRINITY HOUSE, an institution, founded in 1518 and incorporated by Henry VIII., for the examination and licensing of pilots, erecting light houses, etc. TRINITY TERM, in *Eng. law* (see LAW-TERMS).

TRINITY, DOCTRINE OF THE: doctrinal statement of the eternal subsistence in the One living God of the three distinctions (known in common language, for lack of any adequate Eng. term, as 'Persons'), which distinctions are revealed in Holy Scripture as *the Father and the Son and the Holy Spirit—One God*. This doctrine—in which the limited human intellect not only deals with the inscrutable mystery of Infinite and Eternal Being, but also must express its thought in the inadequate terms of human language—has necessarily found an immense variety of theological statements, and has been the centre of endless controversy. While these various statements are allowable, and many of them, indeed, instructive, the final appeal from them all—and for practical purposes the only return—is to the revelation of the great *fact* in Holy Scripture, as indicated above. The most elaborate statement of the doctrine is in the Athanasian Creed, which asserts that 'the Catholic faith is this: That we worship One God as Trinity, and Trinity in Unity—neither confounding the persons nor dividing the substance—for there is one person of the Father, another of the Son, and another of the Holy Ghost. But the Godhead of the Father and of the Son and of the Holy Ghost is all one; the glory equal; the majesty co-eternal.'

It is admitted that the doctrine is not found as a developed theological formula in the Scriptures; but it is claimed to be clearly revealed in its elements in the New Testament, and to be indicated in many statements and revelations of the Old Testament. Believers in this doctrine refer in the Old Testament to the apparent distinction, recognized in the revelations to the patriarchs and Moses, between Jehovah and 'the Angel of Jehovah;' the mode in which 'the Spirit' and 'Word' of God, and 'Wisdom' (Proverbs viii.), are spoken of; and the gradual unfolding of the doctrine of a 'Messiah.' In the New Testament Scriptures the doctrine (or, rather, fact) is found in the Trinitarian formula of baptism, Matt. x.viii. 19; in the benediction by the apostle Paul, II Cor xxiii. 14; and, in numerous passages, in the general character of the claims and prerogatives of Jesus Christ, including the ascription to him of the designation 'the Son of God;' and in the functions attributed to the Holy Spirit. The evidence is held con-

clusive of the equal divine nature and yet personalized distinction of the Son and the Spirit with God the Father. It is generally conceded, however, that the Christians of the 2d, and even of the 3d c., did not bring the doctrine into clear philosophical statement: they were content for the most part to use scriptural expressions in speaking of the Father and the Son and the Spirit, without defining articulately the relation subsisting in the Trinity. It was not till the progress of opposing heresies sought, by philosophical arguments, on the one hand to lower the divine dignity of Christ (Ebionitism—see EBIONITE—in its various forms, and Arianism—see ARIUS); or, on the other hand, to confound the personality of Christ with God the Father—a heresy known in its special form as Patripassianism (see PATRIPASSIANS: MONARCHIANISM)—that the church was led to define in the Nicene Creed the relation of the Son to the Father; and further, in the Nicæno-Constantinopolitan Creed, the relation of the Spirit to the Father (see NICENE: CONSTANTINOPLE, COUNCILS OF: HOMOIOUSIAN). This creed was directed specially against the opinions of Arius. A further clause was afterward added, known as the *filioque* clause (see FILIOQUE), which determined the procession of the Spirit from the Son as well as from the Father; but this clause, and the doctrine which it embodies, was never accepted by the Eastern Church, to whose finer speculative genius is due the determination of the controversies which began in the 3d c. regarding the divine being. The Western or Latin Church had a less refined genius for such speculations; and, so far as it meddled with them, has imparted to them a coarser and more contradictory aspect, e.g., in the ‘Athanasial Creed,’ now well understood to be of Latin and not of Greek origin.

It is not our part here to criticise the evidence for the doctrine of the Trinity, or the validity of the doctrine itself; it is enough to say that the evidence, briefly sketched in the above outline, has been accepted as satisfactory, not only by the Rom. Catholic and oriental communions, but also by all the great Prot. communions. The notable exception in modern times to the reception of the doctrine is in the case of the Socinians or Unitarians (see SOCINUS, FAUSTUS: SOCINUS, LÆLIUS: UNITARIANS), who occupy in their teaching very much the position of the ancient Humanitarians (Ebionites). They reject the doctrine of the Trinity as incredible, and mostly regard Christ merely as a higher prophet (but see SWEDENBORG, EMANUEL). There have always, however, been various thinkers within the Christian Church, e.g.; Dr. Samuel Clarke, beginning of the 18th c., who, accepting generally the doctrine of the Trinity, have rejected the special terms in which it is defined in the creeds.

On this, as on other doctrines of the Christian faith, it is the *fact* and not its *mode* which is revealed in the Scriptures: speculations as to its mode, and various philosophical inferences from it, may be of much or little value, but have no place as authoritative Christian doctrine. An instructive statement—first of the doctrine in its substance, then of

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some theoretical statements of it—is in these words of Prof. Edwards A. Park (*Bibliotheca Sacra*, 1881, Apr.): ‘A theologian may adopt the following definition of the Trinity: The Father is God; the Son is God; the Holy Spirit is God; the three are distinct from each other by a necessity of their very substance; neither is God without the others; and there is only one God. Here is the doctrine, stated without using technical terms.—A theory of the doctrine is, that God is only one person in the psychological sense of that word, but exists in three distinct modes—ontological and necessary modes of subsistence, and not modes of mere action or manifestation. The first of these modes is the ground on which it is distinctively proper for Him to perform one class of official acts; the second is the ground on which it is distinctively proper for Him to perform another class of official acts; the third is the ground on which it is distinctively proper for Him to perform a still different class. As each mode is distinct from the other two, each is called a *distinction*. As each is the ontological basis of a distinct property, each is called a *subsistence*, an *hypostasis*. As each is the ontological basis on which personal acts ultimately depend, each is called a *person* in a technical, not in the philosophical, sense of the word. As each of these modes is relative to the other two, each is called an *internal relation*. God is said to exist in the three modes, distinctions, persons, relations; and the three are said to exist in Him; and the three are said to *be*, as well as to be *in*, the one God. On this theory the different ὑπόστασεις have only one consciousness, one will, one set of attributes; the unity being plain, the triality being mysterious. A different theory is that the three divine persons have each a distinct consciousness, a distinct will, a distinct set of attributes; the unity being mysterious, and the triality plain. A modification of this theory is that the Godhead consists of three minds, each one of which has a consciousness of the other two, and is thus one with them. A not uncommon theory is that the infinite mind differentiates itself from itself, and then unites itself with itself; the subject projecting itself into an object of consciousness is the first Hypostasis; the object being known by the subject is the second Hypostasis; the knowledge identifying the object with the subject, or the love uniting the two, is the third Hypostasis. This general proposition, in diversified forms, lies at the basis of theories which do not exhibit it on the surface. In the earlier period of his life, Melancthon said: “These mysteries (the doctrines of God, the Trinity, the person of Christ) are better revered than inquired into.” At a later period he defined the Trinity as “the eternal necessary process of the divine self-consciousness, in which God, whose thoughts are realities, eternally sets Himself over against Himself, but also again unites with Himself.”’

See (besides references above noted) PERSON: CHRIST, THE: CHRISTOLOGY: LOGOS: SON OF GOD, THE: HOLY SPIRIT: GOD: also references under these titles.

TRINITY—TRINITY COLLEGE.

TRINITY RIVER: in Cal., rising near the Coast Range, and flowing first n.w., then s.w., through a country of rich gold mines, into the Klamath river, in Humboldt co. length estimated 130 miles.

TRINITY RIVER: in Texas, formed by the union of two streams, West Fork and Elm Fork, which rise near the n. boundary of the state, and unite 150 m. s.e.; the main stream flowing thence 550 m. in the same general direction to Galveston Bay, about 40 m. n. of Galveston. It is navigable 300 to 500 miles.

TRINITY CHURCH, in New York: see New York (City).

TRINITY COLLEGE: educational institution in Hartford, Conn., controlled by the Prot. Episc. Chh. It was founded 1824 under the title Washington College; changed to T. C. 1845. The college site was sold to the state of Conn. 1872, and the institution removed to a fine location within the limits of Hartford. On the new grounds (78 acres) the college building is a great quadrangle measuring 1,050 by 376 ft., in the Early English style, 'superior to the buildings found elsewhere in the country' (Pres. George Williamson Smith, of T. C., 1902). The number of vols. in the library (1902) was 43,000: the library was reported to have been 'considerably enlarged' 1891. There are many scholarships, and their number is increasing. The first pres. of T. C. was the Right Rev. Thomas C. Brownell, D.D. The total property of the college is valued at about \$1,500,000. Number of students (1902) 120.

TRINITY COLLEGE, Cambridge: one of the colleges of Cambridge Univ., England; founded by Henry VIII., 1546, on the site, and partly out of the revenues, of several more ancient foundations, of which two deserve notice. King's Hall (*Aula Regis*) was named from its founder (1337), Edward III., whose father, Edward II., had maintained 32 scholars, called king's scholars, but had died before completing his intentions. The master's stipend fourpence per day, and that of each scholar twopen two robes at Christmas. The revenues of King's Hall at the time of its surrender to Henry VIII. amounted to £214 per annum. Michael House was founded 1324, by Hervey de Stanton, chancellor of the exchequer to Edward II.: he dedicated his college to the Trinity, the Virgin Mary, St. Michael the Archangel, and All Saints.—When Henry VIII. united these smaller foundations into the one great college, thenceforth called TRINITY COLLEGE, besides other endowments he added the estates of 27 dissolved monasteries, making the gross revenues about £1,700 per annum. Queen Mary added very largely to these benefactions, and provided for 20 additional scholars, 13 poor scholars or sizars, 4 chaplains, and a choir. Queen Elizabeth gave the college a new set of statutes, by which it was governed until the reign of Queen Victoria, when these statutes were revised. Subsequently, under the Cambridge Univ. Commission (1859-60), new statutes were again given, making important changes. Such fellows as fill the

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office of bursar, tutor, or lecturer in the college, or prof. in the university, are exempt from the necessity of taking holy orders, which must otherwise be done by all fellows within seven years after taking the degree M.A. Marriage is permitted to fellows in a few exceptional cases, and to the chaplains and librarian. The master of T. C. must be in holy orders, and the appointment is in the gift of the crown. The following are some of the more eminent names in the list of masters: John Whitgift, who was raised to the see of Worcester; Thomas Nevile, Dean of Canterbury (d. 1615), who built the greater part of the cloistered court known by his name. To Dr. Barrow, who was made master 1672, the college owes the finishing of Nevile's Court, and the erection of the Library, from designs by Sir Christopher Wren. The famous Dr. Bentley was master 1700-42. William Whewell (q.v.) was one of the most distinguished men that this college has produced; he was also its munificent benefactor, and he bequeathed to it his large fortune. A few of the many other names of distinction are: Lord Bacon (died 1626); Sir Edward Coke (1634); Cowley the poet (1667); Lord William Russell (beheaded 1683); John Dryden (1701); Samuel Pepys (1703); Sir Isaac Newton (1727); Richard Porson (1808); Lord Macaulay (1859); also Prof. H. A. J. Munro, ed. of *Lucretius*, and Lord Tennyson, poet-laureate. The foundation now consists of a master, 60 fellows, and 74 scholars.

The buildings, except the Hall and the Library, are not of any architectural pretensions. The statue of Newton by Roubiliac, in the antechapel, is one of the finest modern statues.—See Cooper's *Annals and Memorials of Cambridge*; Dyer's *History*; and the *University Calendar*.

TRINITY COLLEGE, Dublin: see DUBLIN, UNIVERSITY OF.

TRINITY COLLEGE, Oxford: one of the colleges of Oxford Univ., England. In 1290 Richard de Hoton, Prior of Durham, founded Durham College at Oxford, for the education of the student-monks of Durham. At the dissolution of the monasteries, the property of this institution was transferred by Henry VIII. to the newly erected chapter of Durham Cathedral. Its site and buildings, however, passed into the hands of Sir Thomas Pope, who, 1554, founded a college on the spot, to be called T. C., for the maintenance of 20 scholars, of whom 12 were to be fellows, and 8 scholars properly so called. In 1557 he added four scholarships; also another was added, besides two exhibitions. The fellowships and scholarships are now thrown open without restrictions; the latter are tenable for 20 terms, value £80 a year, besides rooms. This is the first college, after Balliol, founded by a layman; it is remarkable also as having been, like St. John's, founded by a Rom. Cath. after the Reformation. It presents to 11 benefices.

TRINITY HALL—TRINITY SUNDAY.

TRINITY HALL, Cambridge: one of the colleges of Cambridge Univ., England (distinct from Trinity College); founded 1349–50 for scholars of canon and civil law, as well as for the education of clergy, by William Bateman, Bp. of Norwich, co-founder also of Gonville and Caius College. A great pestilence had recently swept away most of the clergy of his diocese, so that (according to a bull of Pope Clement VI., Avignon, 1349) there were not less than 1,000 parishes in the diocese void of incumbents. The first master was Robert de Stratton. There are 13 fellowships, of which 10 may be held by laymen for 10 years, and are not vacated by marriage. There are also 5 law-studentships, 16 scholarships, and 2 exhibitions.—See Cooper's *Memorials and Annals*, and Dyer's *History of Cambridge*; also the *University Calendar*.

TRINITY HOUSE (properly, The Corporation of the Elder Brethren of the Holy and Undivided Trinity): corporation intrusted with the regulation and management of the light-houses and buoys of the shores and rivers of England, under the general superintendence of the Board of Trade (q.v.). It was a mariner's assoc., founded at Deptford 1514, confirmed in its privileges 1680. Its first light-house was erected 1680, all light-houses on the English coast up to that time having been built by private individuals. T. H. is composed of honorary and active members—the 11 honorary 'elder brothers' chosen on the ground of eminent social position; the 19 active 'elder brothers' and an unlimited number of 'younger brethren' chosen on the ground of special qualifications for the duties. The duties are discharged by means of special committees and sub-committees.

TRINITY SUNDAY: the Lord's Day immediately following the Pentecost Day or Whitsunday; so called as being set aside for the special honor of the Holy Trinity. The date of its origin has occasioned much controversy. No such festival as T. S. was known to the fathers of the early centuries: in the older liturgies T. S. was regarded as merely the octave of Pentecost. Evidence of its non-acceptance by the general church before the 9th or 10th c. is the absence even to this day of any corresponding festival in the calendar of the Greek Church; and though it seems quite certain that it was introduced in certain particular churches of the West at earlier and varying dates, its general establishment for the whole Western Church dates from a decree of Pope John XXII. (d. 1334). Nevertheless, the mass and office peculiar to the day are traceable, at least in part, in several sacramentaries and other liturgical books of the earlier centuries.—See Benedict XIV., *De Festis*, i. 2, 10; Binterim, *Denkwürdigkeiten Christ-katholisch. Kirche*, V., part 1.

TRINKET—TRIOXIDE.

TRINKET, n. *trĩng'kět* [imitative of the rattling which pleases children with their toys: Port. *trĩnco*, snapping of the fingers: F. *traquet*, a rattle: Wal. *trankot'*, a rattle, a trifle]: anything small and of no great value; any small ornament for the person made of gold, silver, pebble, or the like; a toy: V. to communicate with; to intrigue; to have mercenary dealing with. **TRIN'KETER**, n. *-ēr*, one who intrigues.

TRINKET, or **TRINQUET**, n. *trĩng'kět* [F. *trĩnquet*, the topgallant: Sp. *trĩnca*, a rope for making fast]: the highest sail of a ship; a topgallantsail.

TRINODA NECESSITAS, *trĩ-nō'da nē-sēs'sĩ-tas*: three species of contributions to which, in Anglo-Saxon times, all the lands of England, whatever their tenure, not excepting those of the church, were subject—viz.: *Bryge-bot*, for keeping the bridges and highways in repair; *Burg-bot*, for keeping the fortresses in repair; and *Fyrd*, for maintaining the military and naval force of the kingdom.

TRINOMIAL, a. *trĩ-nō'mĩ-ăl* [L. *tres*, three; *nomen*, a name]: consisting of three terms, as the technical name of a sub-species in *zool.* or *bot.*, or as an algebraic quantity: N. an algebraic quantity consisting of three terms; a trinomial expression; a name consisting of three terms.

TRIO, n. *trĩ'ō* or *trē'ō* [It. *trio*, three united—from L. *tres*, three]: three united; three persons in company or acting together; a musical composition requiring three performers; also, a movement in $\frac{3}{4}$ -time, following a minuet or other movement, and in a different key, but always leading back to the previous movement in the original key.

TRICECIOUS, a. *trĩ-ē'shūs* [Gr. *treis*, three; *oikos*, a house]: in *bot.*, producing male, female, and hermaphrodite flowers, each on separate plants. **TRICECIOUSLY-HERMAPHRODITE**, another name for *trimorphic*.

TRIOLET, n. *trĩ'ō-lět* [see **TRIO**]: in *verse*, a stanza of eight lines, of which the seventh and eighth are the same as the first and second, and the fourth is the same as the first.

TRIONAL: a hypnotic, used to produce sleep in cases when there is no pain; obtained in colorless, odorless crystals, by passing dry hydrochloric acid into a mixture of anhydrous mercaptan and methyl-ethyl ketone, and oxidizing the product; formula, $C_6H_{18}S_2O_4 = CH_3(C_2H_5)C(SO_2.C_2H_5)_2$. It is soluble in alcohol, ether, and water, and melts at $76^\circ C$.

TRIONES, n. plu. *trĩ-ō'nēz* [L. *trĩonēs*, plowing-oxen]: in *astron.*, the seven principal stars in the constellation Ursa Major, popularly called Charles's Wain or the 'Dipper.'

TRIOR, n., or **TRIER**, n. *trĩ'ēr* [from **TRY**, which see]: a person appointed to ascertain whether a challenge to a panel of jurors, or to a single juror, is just.

TRIOXIDE, n. *trĩ-ōks'id* [Gr. *treis*, three, and Eng. *oxide*]: metallic anhydride having a strong acid character: see **MONOXIDE**.

TRIP—TRIPETALOUS.

TRIP, *v.* *trĭp* [Ger. *trapp-trapp-trapp* represents the sound of the footfall: Dut. *trippen*, to tread: Dan. *trĭp*, a short step: Low Ger. *trippeln*; Sw. *trippa*, to stumble, to slip. OF. *triper*, to tread (see TRAMP)]: to run or step lightly or nimbly; to take short quick steps; to strike the foot against something so as to fall or stumble; to cause to fall by striking the feet suddenly from under the person, with *up*, as 'to trip up;' to overthrow or supplant; to fail; to err: N. a stepping lightly or nimbly; a stumble or fall by striking the foot against an object; a false step; a stroke or catch in wrestling; a failure; a mistake; a slight error; a journey or excursion; a short voyage or tour. TRIP'PING, *imp.*: ADJ. quick; nimble: N. the act of tripping; a light dance. TRIPPED, *pp.* *tript*. TRIP'PER, *n.* *-pĕr*, one who trips. TRIP'PINGLY, *ad.* *-lĭ*, in a light, graceful, or nimble manner. To TRIP THE ANCHOR, to free the anchor from the bottom. To CATCH TRIPPING, to detect any one committing an error or mistake.

TRIPARTED, *a.* *trĭ-pĕrt'ĕd*: in *bot.*, parted into three segments.

TRIPARTITE, *a.* *trĭ-pĕr'tĭt* [L. *tres*, three; *partitus*, *pp.* of *partior*, I divide]: divided into three; having three corresponding parts or copies; made by three parties, as a treaty: in *bot.*, deeply divided into three segments. TRIPAR'TITELY, *ad.* *-lĭ*. TRIPARTITION, *n.* *trĭ-pĕr-tĭsh'ŭn*, a division by three.

TRIBE, *n.* *trĭp* [It. *trippa*; Sp. and Port. *tripa*; F. *tripe*; W. *tripa*, belly, guts]: originally, the entrails; the large stomach of ruminants cleaned and prepared for food. TRIPE MAN, *n.* one who sells tripe. TRIPESTONE, a name given to *anhydrite* when composed of contorted plates, which bear a sort of resemblance to the convolutions of the intestines. TRIPE-VISAGED, *a.* having a face flabby like tripe.

TRIPEDAL, *a.* *trĭ-pĕ'dāl* [L. *tres*, three; *pes* or *pĕdem*, a foot]: having three feet.

TRIBE DE ROCHE, *trĕp dĕh rōsh*: certain lichens, species of *Gyrophora*, which Canadian hunters are often forced to use as food. They are nutritious, but bitter, nauseous, and purgative. They have a leafy peltate thallus, variously lobed and notched—in *G. proboscidea* of smoky-brown color, and in *G. erosa* almost black; the shields are round, without stalks, covered with black membrane, and marked with circles and plaits on the surface. These lichens grow on rocks in northern regions, or on high mountains. They are abundant in Spitzbergen, and a species, well known as a native of the Scottish mountains, is found in the Himalaya above 18,000 feet.

TRIPENNATE, *a.* *trĭ-pĕn'nāt*, or TRIPIN'NATE, *a.* *-pĭn'nāt* [L. *tres*, three; *penna* or *pinna*, a feather]: in *bot.*, applied to a compound leaf three times divided in a pinnate manner.

TRIPETALOUS, *a.* *trĭ-pĕt'ă-lŭs* [Gr. *treis*, three; *petălon*, a leaf]: in *bot.*, having three petals or flower-leaves,

TRIPHTHONG—TRIPLOBLASTIC.

TRIPHTHONG, n. *trǐf'thōng* or *trǐp'* [Gr. *treis*, three, *phthonggē*, sound]: a combination of three vowels in one sound, as *eye*; a trigraph. **TRIPHTHON'GAL**, a. *-thōng'gāl*, pertaining to or consisting of a triphthong.

TRIPHYLLOUS, a. *trī-fīl'lūs* [Gr. *treis*, three; *phyllon*, a leaf]: in *bot.*, having leaves in whorls of three, or producing only three leaves.

TRIPINNATE: see **TRIPENNATE**.

TRIPINNATIFID, a. *trī'pīn-năt'ī-fīd* [L. *tres*, three; *pinna*, a feather; *findĕrĕ*, to divide]: in *bot.*, pinnatifid with the segments twice divided in a pinnatifid manner.

TRIPIT'AKA: see **PIT'AKA**.

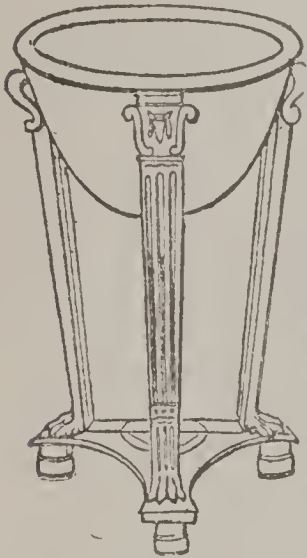
TRIPLE, a. *trīp'l* [F. *triple*—from L. *triplex*, threefold—*from tres*, three; *plico*, I fold]: consisting of three united; threefold; three times repeated; in *OE.*, third: V. to make thrice as much or as many, usually written *treble*. **TRIP'LING**, imp. *-līng*. **TRIPLED**, pp. *trīp'ld*. **TRIP'LY**, ad. *-lī*, in a triple or threefold manner. **TRIPLE-CROWNED**, a. having three crowns; having the triple crown or tiara, as the pope. **TRIPLE TIME**, in *music*, a certain time, so called from each bar possessing a rhythm of three beats. **TRIP'LET**, n. *-lĕt*, three of a kind; three united; three lines of verse that rhyme together; three notes sung or played in the time of two, as when a minim is divided into three crotchets: one of three children at a birth. **TRIP'PLICATE**, a. *-lī-kăt*, composed or consisting of three; threefold: N. a third paper or thing corresponding to two others of the same kind; a set of three, as foreign bills of exchange are usually drawn in *triplicate*. **TRIP'LICA'TION**, n. *-kă'shŭn*, the act of making threefold or adding three together. **TRIPLICITY**, n. *trī-plīs'ī-tī*, or **TRIPLENESS**, n. *trīp'l-nĕs*, state of being threefold. **TRIPLITE**, n. *trīp'līt*, a mineral phosphate of manganese occurring in massive or coarsely granular aggregates, so called from its being cleavable in three directions at right angles to each other. **TRIPLE ALLIANCE**, name of three different alliances: (1) A treaty concluded 1668 at the Hague between England, Holland, and Sweden, having for its object the protection of the Spanish Netherlands and the checking of the conquests of Louis XIV.—(2) An alliance 1717 between Britain, France, and Holland, against Spain, which included among its stipulations that the Pretender should quit France, and that the treaty of Utrecht should be carried into effect regarding the demolition of Dunkirk. The Prot. succession was guaranteed by this treaty in England, and that of the Duke of Orleans in France.—(3) An alliance (known as the *Dreibund*) formed about 1883 between Germany, Austria-Hungary, and Italy, as a check to Russia and France.

TRIPLICOSTATE, a. *trīp'lī-kōs'tăt* [L. *tripplus*, threefold; *costa*, a rib]: in *bot.*, having three ribs proceeding from above the base of the leaf.

TRIPLOBLASTIC, a. *trīp'lō-blăs'tĭk* [Gr. *triploos*, threefold; *blastos*, a germ]: in *zool.*, having embryos in which the blastoderm separates into three layers.

TRIPOD—TRIPOLI.

TRIPOD, n. *trī'pŏd* [Gr. *tripous*, three-footed, also a tripod—from *treis*, three; *pous* or *poda*, a foot]: a three-legged stool or table; a portable three-legged frame or stand, jointed at the top, used to support a camera, surveying-instrument, or the like, when in use; in classical times, a three-legged caldron; a bronze altar supported on three legs, with three rings at the top to serve as handles. Of



Tripod.

this description seems to have been the T. at Delphi, from which the Pythian priestess delivered her oracles, with the addition, however, of a round flat plate on the top, on which the priestess sat while giving the response, while a laurel wreath lay on it at other times. Tripods of similar form were given as prizes at the Pythian games; and at Athens a T. was considered an appropriate reward for a successful choragns. Some beautiful tripods were found at Pompeii; and there are interesting specimens in the Brit. Museum. Analogous to the classic T. is Thor's *kettle* in Scandinavian mythology, probably the original of the witches' caldron.

TRIPOLI, *trīp'ŏ-lī*: former regency, now a vilayet, of the Ottoman empire, and the most easterly of the Barbary States, n. Africa; bounded w. by Tunis, s. by the Libyan Desert and Fezzan, e.—if we include the plateau of Barca (q.v.)—by Egypt, and n. by the Mediterranean; estimated 399,000 sq. m.; pop. uncertain, but prob. between 800,000 and a million. T. is less mountainous than the rest of Barbary, the Atlas range terminating here in two chains parallel to the coast, never higher than 4,000 ft. There are no rivers, and rain seldom falls during the long hot summers; but the dew is copious, and supports vegetation in favored spots. The coast region (about 1,100 m. long) is very fertile about Tripoli and Mesurata, where all sorts of tropical fruits, grain, wine, cotton, madder, etc., are produced; but further e., along the shores of the Gulf of Sidra, sandy desolation reigns. The interior yields senna, galls, and the finest dates; the carob and lotus are indigenous. Sheep and cattle are reared in great numbers, and T. is noted for its small but excellent horses, and its strong and handsome mules. The commerce consists in exporting, principally to Malta and the Levant, the products of the country and of interior Africa (gold-dust, ivory, natron), brought in caravans across the desert. The imports (chiefly European manufactures) have been declining gradually of late years, from two causes. The *first* is the new direction which the trade of central Africa is assuming: by the Niger and its great tributary, the Benue, European manufactures are more rapidly and economically conveyed to the northern intertropical regions than by the tedious overland route of the Great Sahara. The *second* cause is the abolition of the

TRIPOLI.

slave-trade, which has stopped the demand for the commodities that supported the traffic.

T. is subdivided into four *livas* or provinces—Tripoli, Benghazi, Mesurata, and Gadames. The gov. gen. has the title, rank, and authority of a pasha of the Ottoman empire: he is appointed by the sultan, and in his turn appoints the *beys* or subordinate governors of the provinces. The military force consists of a body of Turkish soldiers, formerly about 3,000, but increased 1885 to 17,000 in number, whose business is to keep down insurrections, but who were formerly wont to vary it by creating them. The natives (Libyan Berbers, Moors, and a few Arabs) pay to the imperial govt., as tribute, a tenth of all products of the soil; and there is a special tax on every olive-tree and date-tree, on every camel, on all horned cattle, on sheep and goats, and on Jewish residents. Little wisdom and less justice are shown in either the imposition or collection of the taxes.

In ancient times T. (when we first read of it) appears to have formed the most w. portion of the territory of Cyrenaica (Barca), or at least to have been tributary to the Cyrenæans, from whom it was wrested by the Carthaginians. It passed next to the Romans, who included it within the province of Africa, and gave it the name *Regio Syrtica*. About the beginning of the 3d c. it became known as *Regio Tripolitana* (on account of its three principal cities, Cæa, Sabrata, and Leptis, which were leagued together—whence its present name T.), and was raised to the rank of a separate province probably by Septimius Severus, a native of Leptis. Like the rest of n. Africa, it was conquered by the Arabs (see BARBARY), and the feeble Christianity of the natives was supplanted by a vigorous and fanatical Mohammedanism. In 1552 the Turks got possession of it, and have since been its rulers, though the authority of the sultan, till 1835, had been virtually at zero for more than a century. In that year an expedition was dispatched from Constantinople; the ruling dey, Karamanli (in whose family the sovereignty had continued since 1714), was overthrown and imprisoned; a new Turkish pasha, with vice-regal powers, was appointed, and the state made an eyalet of the Ottoman empire. Several rebellions (notably 1842 and 44) have been suppressed.

TRIP'OLI, called by the Turks *Tarabûlûs*, and probably the *Cæa* of antiquity: city, cap. of the Turkish n. African vilayet of T.; on a rocky promontory in the Mediterranean, which forms a small bay. It is surrounded by high walls with bastions, and is irregularly built, but has beautiful gardens. There are 12 mosques, 3 synagogues, and 2 Christian churches. The city still has a typical Moorish aspect. Though the majority are Moslems, nearly all the trade is in the hands of Jews and Christians. The overland trade to Sudan has greatly fallen off, but there is considerable trade with Malta.—Pop. (1885) 30,000.

TRIP'OLI (mod. Ar. *Tarâbulus*, anc. *Tripolis*): seaport, one of the chief commercial towns of Syria, cap. of a pashalic in the eyalet or govt. of Sidon; near the Mediter-

TRIPOLI—TRIPOLITZA.

anean coast, on the e. border of a small triangular plain extending into the sea, and on both sides of the river Kadisha; 50 m. n.n.e. of Beyrout. The town is substantially built of stone, with many remains of mediæval architecture, and is supplied with excellent water by an aqueduct. It is surrounded by gardens of orange, lemon, mulberry, apricot, and other fruit trees, which are planted also in the town itself, and give the place a rich and picturesque appearance; but the low marshy neighborhood renders it unhealthful. On the left side of the river stands the castle built by Count Raymond of Toulouse, 12th c., when the city was taken by the Crusaders. At the n.w. apex of the small plain, $1\frac{1}{2}$ m. from T., is its port, El-Mina (the Landing-place), or the Marina, a small fishing-village. The harbor, like other harbors on the Syrian coast, scarcely deserving the name, is formed by a line of low rocky islets. The trade of T. has declined, being superseded by that of Beyrout; its exports now consist chiefly of silk, sponges, and tobacco: there are manufactures of soap. T. is regularly visited by the steamers of the French Messageries. It is the see of a Greek bishop. —Pop. estimated 17,000; with its port, 24,000—nearly half being Christians.

The anc. T., an important maritime city of Phœnicia, stood on the plain, where immense numbers of granite shafts and other relics of antiquity are still found. Its name (*Three Cities*, or the *Triple City*) was from its being founded by the cities of Tyre, Sidon, and Aradus, as an entrepôt for trade and a point of federal union. It was for many centuries a place of great commercial importance.

TRIPOLI, n. *trîp'ô-lî*: a polishing-powder originally brought from *Tripoli*, in Africa, but now from many other places—an infusorial earth of a whitish-gray or yellow color, soft, light, and friable, yielding readily to the nail, and crumbling down in water like rotten-stone. It has a coarse, dull, earthy fracture, is rough to the touch, and is of gray, yellow, or red color. The particles which compose it are the siliceous frustules of *Diatomaceæ* and the curious forms of Polycistines (protozoan), which occur unaltered in it, and are united without visible cement. Ehrenberg estimated that every cubic inch of Bilin T. weighing 220 grains contained 41,000,000,000 of these minute water-weeds. Deposits of T., often called infusorial earth, occur in the Tertiary rocks in every quarter of the world. TRIP'OLINE, a. *-lîn*, pertaining to tripoli.

TRIPOLITZA, *trê-pô-lî'tsâ* ('three cities'), official name TRIPOLIS: town of Greece; under the former Turkish rule, cap. of the Morea; now chief town of the nomarchy or govt. of Arcadia; 22 m. s.w. of Argos, 39 s.w. of Corinth, in a plain 3,000 ft. above sea-level. It derives its name from being the modern representative of three anc. cities, Tegea, Mantinea, and Pallantium. In 1821 it was stormed by the Greek insurgents, and 1828 razed to the ground by the troops of Ibrahim Pasha; it has since been rebuilt. —Pop. (previous to 1821) about 20,000; (1889) 10,698.

TRIPOS—TRIREME.

TRIPOS, n. *trī'pōs* [Gr. *tripous*, three-footed (see **TRIPOD**)]: a three-legged stool; at *Cambridge Univ.*, England, one of the honor-lists with its three classes—the *trīpōses* now embrace mathematics, classics, law, theology, etc., ten departments in all; the honors examination. **TRIPOS-PAPER**, a printed list of the successful candidates for mathematical, classical, and other honors. **TRIPOSES**, n. plu. *trī'pōs-ēz*, the three divisions in the list of mathematical, classical, and other honors, the mathematical consisting of (1) Wranglers, (2) Senior Optimes, (3) Junior Optimes—the classical and others being divided into first class, second class, and third class.

TRIP'PANT: in *her.*, term analogous to *Passant* (q.v.), but applied to animals of chase.

TRIPTEROUS, a. *trīp'tēr-ūs* [Gr. *treis*, three; *pteron*, a wing]: in *bot.*, three-winged, as a leaf.

TRIPTOTE, n. *trīp'tōt* [Gr. *treis*, three; *ptōtos*, liable to fall]: in *gram.*, a noun used in only three cases.

TRIPTYCH, n. *trīp'tīk* [Gr. *treis*, three; *ptuchē*, a fold]: sacred pictorial representation, used generally as an altar-piece, consisting of three compartments, the centre one fixed, the other two (each about the half the width of the principal tablet) made to fold like doors on the centre one and cover it: a writing-tablet in three parts that can be folded into one. See **DIPTYCH**.

TRIQUETROUS, a. *trī-kwē'trūs* [L. *triquetrus*, having three corners—from *tres*, three]: in *bot.*, having three angles, the faces being concave; in *anat.*, three-sided or three-cornered, as a bone. **TRIQUETROUSLY**, ad. *-lī*.

TRIREME, n. *trī'rēm* [F. *trirème*—from L. *trirēmis*, a trireme—from *tres*, three; *rēmus*, an oar]: a vessel with three benches or tiers of oars on each side; a galley having three banks of oars—said to have been employed first by the Corinthians in their war with Corcyra, B.C. 664. In the Persian and Peloponnesian wars, triremes were the largest vessels; but at the time of Alexander, galleys with four and five banks had gradually come into favor. In the Punic wars, the Carthaginians generally employed quinqueremes; and as the Roman triremes could have no chance against vessels with such high bulwarks, the Romans thenceforth constructed their war-vessels after the model of the Carthaginian quinquereme.

The banks of oars were elevated above each other, but not perpendicularly; and the lowest rank of rowers, having the shortest oars and easiest work, had least pay. The T. or the quinquereme was also provided with a square sail, which was used in voyaging when the wind was favorable, but not used in action. The crew numbered about 200; and on a smooth sea it was capable of considerable speed and accuracy of maneuvering. In earlier times, before the Persian war, and even later, victory depended more on the number and valor of the soldiers on board than on the skill of the seamen. Herodotus mentions that besides the crew there were 40 marines on each Ionian T.: the Athenians improved this system by decreasing the number

TRISAGION—TRISMUS.

of fighting men and trusting more to skilful management of their vessels. In a fight, the aim of every T. was not, as before, to grapple with its opponent, but to dash with the greatest momentum possible with its beak against the enemy's vessel, striking it amidship, or, at any rate, disabling his banks of oars on one side: hence, later, in the Peloponnesian wars, the number of marines in each ship was reduced to ten. This system of ram-fighting has come again into vogue. A contrivance, strengthening the prow of the T., and increasing its efficiency as a ram, gave the Syracusans their final victory over the Athenians in the harbor of Syracuse.

TRISAGION, n. *trīs-ā'gī-ōn* [Gr. *trisagiōs*, thrice holy—from *trīs*, thrice; *hagiōs*, holy]: in the *Eastern Church*, the threefold invocation of the Deity as 'Holy, Holy, Holy,' one of the doxologies in use in the Greek Church, which is repeated in the form of versicle and responses by the choir in certain parts of the liturgy. The words of the Trisagion are: '*Hagios O Theos, Hagios Ischuros, Hagios Athanatos, eleison hemas!*' (O Holy God, O Holy Mighty One, O Holy Immortal, have mercy on us!). This doxology, in its original Greek form, is one of the few fragments of the Greek liturgy which (like the *Kyrie Eleison*) are retained in the original language in the Roman mass. It occurs in the service of Good Friday in the procession and veneration of the cross (see GOOD FRIDAY). The name T. is sometimes incorrectly given to the Sanctus (q.v.).

TRISE, v. *trīz*: among *seamen*, to haul up by means of a rope. TRI'SING, imp. TRISED, pp. *trīzd*. Same as TRICE 2, which see.

TRISECT, v. *trī-sĕkt'* [L. *tres*, three; *sectus*, pp. of *secāre*, to cut]: to cut or divide into three equal parts. TRISECT'ING, imp. TRISECT'ED, pp. TRISECTION, n. *-sĕk'-shŭn*, the division of a thing into three equal parts; in *geom.*, the division of an angle into three equal parts.

TRISEPALOUS, a. *trī-sĕp'ā-lŭs* [L. *tres*, three, and Eng. *sepal*]: in *bot.*, having three sepals.

TRISEPTATE, a. *trī-sĕp'tāt* [L. *tres*, three; *septus*, pp. of *sepĭō*, I fence in]: having three partitions or septa in an ovary or fruit.

TRISMEGISTUS, *trīs-mĕ-jīs'tŭs* [Gr., Thrice-greatest]: epithet applied to the Egyptian Hermes (q.v.) or Thoth (q.v.) by the Neo-Platonists and the devotees of magic, alchemy, and mysticism generally, who deemed him the source of all mysterious doctrines: see HERMETIC BOOKS.

TRISMUS, n. *trīz'mŭs* [Gr. *trizō*, I gnash]: lock-jaw; a kind of tetanus affecting the muscles of the jaw. TRISMUS NASCEN'TIUM, a form of lock-jaw occurring in newly-born children, caused mainly by impure atmosphere: see LOCK-JAW. In Iceland this disease annually carries off a large proportion of infants between the 5th and 12th days after birth. It is very frequent and fatal also in the W. Indies, where it is known as the 'ninth-day disease.' Another of its names is 'the jaw-fall,' from the jaw relaxing and dropping on the breast shortly before death. The dis-

TRISOCTAHEDRON—TRISTRAM.

ease, formerly common in hospitals, has become rare with the introduction of better ventilation. For treatment, immediate removal to a pure air, a warm bath, and a dose of castor-oil should be tried.

TRISOCTAHEDRON, n. *trīs-ōk'tă-hē'drōn* [Gr. *trīs*, thrice; *ōktō*, eight; *hedra*, a base]: a figure having twenty-four equal faces.

TRISTAN DA CUNHA, *trīs-tân' dâ-kôn'yâ*: group of three islands and two small islets, belonging to Great Britain, in the s. Atlantic, midway between the coast of S. America and the Cape of Good Hope; 37° 5' 50" s. lat. The largest island, Tristan, is about 20 m. in circumference, having in the centre a volcanic cōne 7,640 ft. high. Several sailors have resided on these islands for a longer or shorter time: one company on Tristan, left by a Brit. expedition 1817, numbered (1886) 97 persons. Inaccessible Island, 20 m. from Tristan, harbored two Germans for two years, who had a kind of Robinson Crusoe experience; but were glad of opportunity to leave by the Brit. ship *Challenger* 1873. Nightingale Island, 10 m. from Tristan, is the smallest of the three.

TRISTE, or TRIST, a. *trēst* or *trīst* [F. *triste*—from L. *tristis*, sad]: sad; unhappy. TRIST'FUL, a. *-fūl*, in *OE.*, sad; melancholy; gloomy.

TRISTEARIN, n. *trī-slē'ă-rĭn* [see STEARIN]: the fatty body forming the greater part of mutton-fat; also called GLYCERYL TRISTEARATE.

TRISTICHOUS, a. *trīs'tĭ-kūs* [Gr. *treis*, three; *stichos*, a row]: in *bot.*, arranged in three vertical rows.

TRISTRAM, *trīs'tram*: hero of a British legend, originally unconnected with King Arthur and the Round Table, though later minstrels have sought to interweave them.

T., having in infancy lost both parents, is brought up for the first fifteen years of his life at the court of the monarch who had slain his father, after which he proceeds to Cornwall, and is acknowledged by his uncle Mark, King of Cornwall, who appoints him his heir and successor. Having received a severe wound in a duel, he is cured by Ysolt or Ysonde, daughter of the queen of Ireland; and on his return to Cornwall informs his uncle of the marvellous beauty of the Irish princess. Mark sends his nephew to Dublin to solicit her hand in marriage. The king's suit is successful, and T. escorts her to England; but, both having unwittingly partaken of a love-potion (intended for Mark), they are immediately inflamed with a criminal passion for each other. Ysolt marries the king; but, by help of her maid, Brenqwain, she has secret interviews with her lover, and for some years succeeds in allaying the suspicions of her husband. At last, however, T. is banished; but his uncle, becoming reconciled to him, invites him back to court, where the amours of the lovers are renewed. Banished a second time, T. goes abroad: in Brittany he marries another Ysolt, called, for distinction, Ysolt *with the white hand*, daughter of the Duke of Brittany. In one of his exploits, he is desperately wounded, and can be cured only

by Ysolt of Cornwall. A messenger was dispatched for her, with instructions to hoist a white sail if she accompanied him on his return; but if not, a black sail. As the vessel nears the shores of France, T.'s wife, Ysolt *with the white hand*, recognizes the white sail, and, jealous at the thought of a rival's approach, hurries to her husband's chamber, and tells him the messenger comes with black sails spread. T., in an agony of disappointed love, sinks back and expires. When the queen lands, and hears of his death, she rushes to the castle, throws herself on his corpse, and dies beside him. King Mark, learning the story of the love-potion, buries them in one grave, planting over Ysolt a rose-bush, and over T. a vine, which grew up so inextricably intertwined that no man could ever separate them.

The popularity of the story in the middle ages was unbounded. Sir Walter Scott's metrical version of *Sir Tristram* (1806) is from the Auchinleck MS., considered to be the composition of Thomas the Rymour (q.v.). As early as the middle of the 12th c., the legend had become a favorite throughout France; and subsequently found its way into Spanish, Italian, German, Scandinavian, Slavic, and Greek literature. *Tristan und Isolde* is the subject of one of Wagner's operas.—See Michel's *Tristan* (1835), and Bossat's (1865).

TRISYLLABLE, n. *trīs-sīl-lă-bl* [Gr. *treis*, three; *sullabē*, a syllable (see SYLLABLE)]: a word consisting of three syllables. TRISYLLABIC, a. *trīs'il-lăb'ik*, or TRIS'YLLAB'ICAL, a. *-lăb'i-kăl*, consisting of three syllables; pertaining to a trisyllable: see note under DISSYLLABLE.

TRITE, a. *trīt* [L. *tritū*, pp. of *terēre*, to rub: It. *trito*, trite: Russ. *terete*, to rub]: worn out; hackneyed; common; stale; so common as to have lost all novelty and interest. TRITE'LY, ad. *-lī*, in a common manner. TRITE'NESS, n. *-nēs*, the quality of being trite; staleness.

TRITERNATE, a. *trī-tēr'năt* [L. *tres*, three; *terni*, three each]: in bot., divided three times in a ternate manner.

TRITHEISM, n. *trī-thē'izm* [Gr. *treis*, three, and Eng. *theism*]: the opinion or doctrine that the Father, Son, and Holy Spirit are three distinct Gods. TRI'THEIST, n. *-ist*, one who maintains tritheism. TRI'THEIS'TIC, a. *-is'tik*, or TRI'THEIS'TICAL, a. *-is'ti-kăl*, pertaining to tritheism.

TRITHING: see TRIDING.

TRITICUM: see WHEAT: COUCH GRASS.

TRITON, n. *trī-tŏn* [L. and Gr. *Trītŏn*]: a fabled sea-god, the son of Neptune, and Amphitrite, and trumpeter of Neptune; represented as having the upper part of the body like that of a man, and the lower like that of a fish. He dwells with his parents in a golden palace at the bottom of the sea, and usually figures as attendant on his father, riding over the Mediterranean on a horse or other sea-monster, soothing the turbulent waves by blowing his shell-trumpet—his 'wreathed horn,' as Wordsworth calls it. The later poets speak of Tritons, in the plural, as a race of subordinate sea-deities, described by Pausanias as having sea-green hair and eyes, gills below

TRITON—TRIUMPH.

the ears, human noses, broad mouths with the teeth of animals, scales on their bodies, and a tail like that of a dolphin.

TRITON, *trī'ton*: genus of aquatic Salamandridæ belonging to the e. hemisphere. In some classifications allied Amer. genera are called tritons. Thus, *Spelerpes*, of family *Plethodontidæ*, has been classed as T. The European T., or Crested Newt, is *T. cristatus*.

TRITOZOOID, n. *trīt ō-zō'oyd* [Gr. *trītōs*, third; *zōōn*, an animal; *eidos*, resemblance]: in *zool.*, a zooid of the third generation.

TRITURATE, v. *trīt ū-rāt* [L. *tritūra*, a rubbing, chafing—from *trītus*, pp. of *terēre*, to rub]: to rub or grind to a fine powder. TRITURATING, imp. TRITURATED, pp. TRITURATION, n. *-rā shūn*, the act of reducing to a fine powder. TRITURABLE, a. *-rā'bl*, capable of being reduced to a fine powder by rubbing or grinding.

TRIT'YL: see PROPYL.

TRIUMPH, n. *trī'ūmf* [L. *triumphus*, a solemn and magnificent entrance of a general into anc. Rome after having obtained an important victory: Gr. *thriambos*, a procession in honor of Bacchus: F. *triomphe*]: the pomp with which a victory was celebrated in public by the anc. Romans; a victory; a conquest; state of being victorious; exultation for success: V. to celebrate a victory with pomp; to obtain victory; to exult in consequence of an advantage gained; to be prosperous. TRIUMPHING, imp.: N. the act of one who triumphs. TRIUMPHED, pp. *-ūmf*. TRIUMPHER, n. *-ūmf-ēr*, one who triumphs. TRIUMPHAL, a. *-fāl*, pert. to a triumph; serving to commemorate a victory; serving to betoken joy, or to give a joyful welcome. TRIUMPHANT, a. *-fānt*, celebrating victory; rejoicing, as for victory; expressing joy for success; victorious. TRIUMPHANTLY, ad. *-lī*, victoriously; with success. TO TRIUMPH OVER, to overcome; to subdue. TRIUMPHAL ARCH, an arch erected to perpetuate the memory of a conqueror, or some remarkable victory or important event; a temporary erection in the form of an arch as a mark of rejoicing.—*Triumph*, the public honor bestowed in ancient Rome on a general successful in war, consisted in a solemn procession along the *Via Sacra* up to the Capitol, where sacrifice was offered to Jupiter. The victor sat in a chariot drawn by four horses—his captives marching before, his troops behind. Certain conditions had to be fulfilled before a T. could be granted, and it was the business of the senate to see that these were enforced. Under the empire, generals serving abroad were considered the emperor's lieutenants; therefore, however successful in their wars, they had no claim to a triumph, but received instead *triumphal decorations* and other rewards.

The appearance of Rome on the occasion of a T., especially in later times, was joyous in the extreme. All work was suspended; the temples were thrown open, and decorated with flowers; the populace clad in holiday attire, crowded the steps of public buildings in the *Via Sacra*,

and the forum, or mounted the scaffoldings erected to give view of the procession; banquets were spread before every door. As for the *imperator* (commander—see EMPEROR) himself, after having pronounced a eulogy on the bravery of his soldiers, he ascended his triumphal car, entered the city by the *porta triumphalis*, where he was met by the senate, and the procession began. The senate, headed by the magistrates, marched first; next a body of trumpeters; then a train of carriages and frames laden with the spoils; then a body of flute-players, followed by the oxen to be sacrificed, and the sacrificing priests, etc.; then the distinguished captives with bands of inferior prisoners in chains; after whom walked the lictors of the imperator, having the fasces wreathed with laurel. Next came the hero of the day—the imperator, in a circular chariot, attired in an embroidered robe (*toga picta*) and flowered tunic (*tunica palmata*), bearing in his right hand a laurel bough, in his left a sceptre, and having his brows garlanded with Delphic laurel. He was accompanied by his children and his intimate friends. His grown-up sons, and the legates, tribunes, and equites, rode behind; the rear being brought up by the rest of the soldiery, singing or jesting at their pleasure, for it was a day of carnival and license. When the procession had reached the Capitoline, some of the captive chiefs were taken aside and put to death; the oxen were then sacrificed, and the laurel wreath placed in the lap of Jupiter. In the evening the imperator was publicly feasted; and it was customary to provide him a site for a house at the public expense.

The *ovation*, or lesser T., granted for a great success which yet did not fulfil the specified conditions for a T., differed from the greater chiefly in these respects: that the imperator entered the city on foot, clad in the simple *toga prætexta* of a magistrate; that he bore no sceptre, was not preceded by the senate and a flourish of trumpets, nor followed by his victorious troops, but only by the equites and the populace; and that the ceremonies were concluded by sacrificing a sheep instead of a bull, whence, doubtless, the name *ovation* [from *ovis*, a sheep].

TRIUMVIR, n. *trī-ūm'vēr* [L. *tres*, three; *trium*, of three; *vīr*, a man]: one of three men united in the same office; plu. TRIUM'VIRS, *-vērz*, or TRIUM'VIRI, *-vī-rī*. TRIUM'VIRATE, n. *-vī-rāt*, a company of three; in *anc. Rome*, one of several groups or companies of three men jointly charged with some municipal or state business, such as the *triumviri capitales*, who took cognizance of murders and robberies; *triumviri nocturni*, who watched over the safety of Rome in the night-time; *triumviri monetales*, or masters of the mint: specifically, in *Roman hist.*—(1) the coalition or private league by which Pompey, Crassus, and Cæsar—the three most powerful men of their time—sought to carry out their own schemes of political aggrandizement, in spite of the opposition of the senate. This compact was not a triumvirate in the proper sense of the term: it had no legally constituted existence: it was, in fact, only a conspiracy of three men against the authority of the state. (2) The division of

TRIUNE—TROCHAR.

government between Octavian (Augustus), Mark Antony, and Lepidus, in the civil wars that followed the murder of Cæsar—an arrangement sanctioned by the senate. The former is usually called the *first*, the latter the *second*, triumvirate.

TRIUNE, a. *trī'ūn* [L. *tres*, three; *unus*, one]: three in one—applied to God, in order to express the unity of the Godhead in a trinity of persons. **TRIU'NITY**, n. *-ū'nĭ-tĭ*, state of being triune; the Trinity.

TRIVALENT, a. *trīv'a-lĕnt* [prefix *tri*; L. *valens*, *valentis*, powerful]: in *chem.*, equivalent to three units of any standard, especially to three atoms of hydrogen.

TRIVET: see **TREVE**.

TRIVIAL, a. *trīv'i-āl* [F. *trivial*—from L. *triviālis*; that may be found everywhere, ordinary—from *trivium*, a cross-road—from *tres*, three; *via*, a road or way]: such as may be found everywhere; hence, commonplace; of little worth or importance; trifling; inconsiderable; slight; vulgar. **TRIVIALITY**, n. *trīv-ĭ-āl'ĭ-tĭ*, the state of being trivial: anything of little worth; a trifle. **TRIV'IAL**LY, ad. *-lĭ*. **TRIV'IAL**NESS, n. *-nĕs*, lightness; unimportance. **TRIV'ium**, n. *-ūm* [L.]: a name given in the middle ages to the three arts of grammar, logic, and rhetoric, constituting, as it were, a *triple way* to eloquence. **TRIVIAL NAMES**, the names added to the names of genera, which double or binomial names constitute the names of species, as *Triticum* is the generic name of certain cereals, while *Triticum vulgāre* is the specific name of one of the genus—viz., common wheat; same as **SPECIFIC NAME**, which see under **SPECIFY**.

TRI-WEEKLY, a. *trī'wĕk-lĭ* [*tri*, and Eng. *weekly*]: occurring or appearing once every three weeks (less correctly, thrice a week), as a *tri-weekly* newspaper.

TROAD, *trō'ad*, **THE**: the land of ancient Troy (q.v.), bounded n. by the Hellespont and part of the Propontes; w. by the Ægean Sea; s. by the Gulf of Adramyttium; e. by the mountain range of Ida, at whose base stood the city of Troy: see **TROY** (ancient).

TROCAR, or **TROCHAR**, n. *trō'kār* [F. *trocār*—from *trois*, three; *carre*, an angle—from L. *quadra*, a square—so called from its triangular point]: a surgical instr. for taking off fluids from parts of the body, as in dropsy.

TROCHAIC, or **TROCHAICAL**: see under **TROCHEE**.

TROCHAL, a. *trō'kāl* [Gr. *trōchōs*, a wheel—from *trechein*, to run]: wheel-shaped.

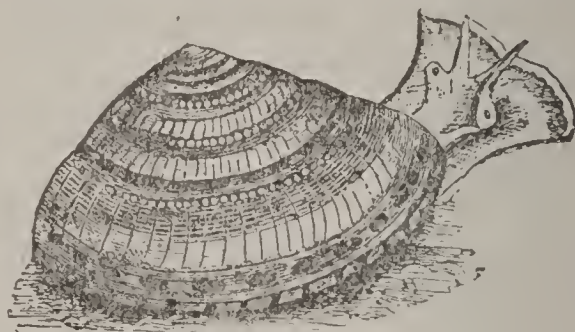
TROCHANTER, n. *trō-kăn'tēr* [Gr. *trochantēr*, a runner, the ball on which the hip-bone turns in its socket—from *trochazein*, to run along—from *trechein*, to run]: in *anat.*, one of the two processes or prominences at the upper part of the thigh-bone, called the *greater* and the *less*, in which are inserted several of the muscles used in motion. **TROCHANTER'IC**, a. *-tĕr'ĭk*, of or pertaining to the trochanters.

TROCHAR: see **TROCAR**.

TROCHEE—TROCHU.

TROCHEE, n. *trō'kē*, or **TROCHÆUS**, n. *trō-kē'ūs* [L. *trochæus*; Gr. *trochaïos*, a trochee—from *trochos*, a running; *trechein*, to run]: a metrical foot of two syllables. a long followed by a short. **TROCHAIC**, a. *trō-kā'ik*, or **TROCHAICAL**, a. *-ī-kāl*, consisting of trochees.

TROCHIDÆ, *trō'kī-dē*: family of gasteropodous mollusks, of order *Pectinibranchiata*, section *Asiphonata*. The shell has the aperture entire, closed with an operculum; spiral, and very generally top-shaped, as in the genus *Trochus*, the species of which are popularly known as Top-shells. The species are very numerous, and widely dis-



Trochus.

tributed. They feed on sea-weeds, and some are found on rocks between high and low water mark. Many are very beautiful, and some small kinds, strung together, are often employed by South Sea islanders for ornamental purposes, the epidermis and outer layer being removed, exposing the pearly substance of the shell. Some of the tropical ones attain large size. The T. are closely allied to *Turbinidæ*.

TROCHILICS, n. plu. *trō-kīl'iks* [Gr. *trochilīa*, a roller, a windlass; *trochos*, a wheel—from *trechein*, to run]: in *mech.*, the science of rotatory motion. **TROCHILIC**, a. *-īk*, having power to draw out or turn round, as a wheel; pertaining to rotatory motion.

TROCHILUS, *trōk'ī-lūs*, AND **TROCHILIDÆ**, *trō-kīl'ī-dē*: see HUMMING-BIRD.

TROCHLEA, n. *trōk'lē-ā* [L. *trochlēa*, a case containing one or more pulleys—from Gr. *trochos*, a wheel; *trechein*, to run]: in *anat.*, a pulley-like cartilage over which a tendon passes; one of the projections of bones over which parts turn as ropes over pulleys. **TROCH'LEAR**, a. *-lē-ēr*, shaped like a pulley. **TROCH'LEARY**, a. *-ēr-ī*, of or pertaining to the trochlea.

TROCHOID, n. *trō'koyd* [Gr. *trōchōs*, a wheel; *eidos*, resemblance]: in *geom.*, the curve described by any point in a wheel rolling on a straight line: **ADJ.** conical with a flat base, as the shells of certain Foraminifera. **TROCHOIDAL**, a. *-koyd'āl*, pertaining to a trochoid; in *anat.*, applied to the rotatory motion of one bone upon another.

TROCHU, *tro-shū'*, **LOUIS JULES**: French soldier: b. Palais. Morbihan, France, 1815, Mar. 12. He was educated at the St. Cyr Milit. School; became artillery lieut. 1837; served with high distinction under Bugeaud in Algeria;

won the rank of gen. of division in the Crimean war; commanded a division in the Italian campaign 1859. Before the Franco-German war he was Marshal Niel's successor in command of the Toulouse army division. After the battle of Sedan, T. was commander-in-chief at Paris till the city capitulated. His work *L'Armée française en 1867* reached a 20th ed. 1870. In justification of the govt. of National Defense he published (1873) *Pour la Vérité et pour la Justice*.

TROD, pt. *tröd*; TROD, or TRODDEN, pp. *tröd'n*: see under TREAD.

TROGLODYTE, n. *trög'lō-dīt* [Gr. *trōglodutēs*, one who creeps into holes—from *trōglē*, a hole, a cavern; *duein*, to enter]: one dwelling in a cave; a cave-dweller: specifically, in *hist.*, a member of certain races or tribes of uncivilized men who lived in natural caverns or in holes which they had dug for themselves in the earth; hence, one who lives so secluded a life as to be ignorant of current events. TROG'LODYT'IC, a. *-dīt'ik*, or TROG'LODYT'ICAL, a. *-dīt'ikāl*, pert. to a troglodyte or dweller in caves.—*Troglodytes* are mentioned by Strabo as existing in Mauritania and the Caucasus; but perhaps the best-known troglodytes were those of s. Egypt and Ethiopia, where a considerable district was called *Regio Troglodytica*. They could not speak articulately, but shrieked or screamed like the lower animals: the Greeks, however, are not very trustworthy authorities in the matter of language—accounting every dialect which they did not understand a barbarous jargon. The chief occupation of the troglodytes was herding cattle, though we read that they were also hunters and robbers. They are mentioned also as serving among the light troops in the army of Xerxes. Their habits of life were rude and debased; they are reported to have eaten the bones and hides as well as the flesh of their cattle; their drink was a mixture of milk and blood; and they had a community of wives. The women tattooed their bodies; the men wore skins or went unclothed. Their treatment of the dead was very revolting: they bound the corpse neck and heels together, fixed it to a stake, pelted it with stones, amid shouts of laughter, and then buried it beneath a cairn, placing a horn on the top.

What measure of truth there may be in the stories about the troglodytes, it is now impossible to say; but archæological investigations have led to the conclusion that a race of cave-dwellers preceded in most countries the races that lived in houses built on the ground; and perhaps we shall not be far wrong if we regard Troglodytism as the primitive state of mankind in very many countries.

TROGONIDÆ, *trō gŏn'ī-dē*: family of birds, ranked by some naturalists, on account of their habits, in order *Insesores* and tribe *Fissirostres*; but more generally, on account of the formation of the feet—two toes before and two behind—placed in the order *Scansores*. The T. are remarkable for beauty of plumage, which is soft, full, and brightly colored. The bill is short, strong, with a wide

TROIC—TROLL.

gape; tail generally long; feet are small. All the T. are tropical; they belong chiefly to s.e. Asia, the Indian Archipelago, and S. America. They inhabit forests, where they sit motionless on branches, waiting for insect prey, darting on insects as they fly past. They make their nests in the hollows of decayed trees. Their flesh is esteemed for flavor. They all are of small size. In brilliancy of plumage, some are excelled only by humming-birds. The Imperial T. (*Calurus resplendens*), the Quesal of Central America, is the extreme of beauty; brilliant metallic green in color, the effect heightened by separated feather-filaments like floss, and the tail-coverts forming a long plummy train.

TROIC, a. *trō'ik* [L. *Troicus*]: of or pertaining to ancient Troy or the Troas; Trojan.

TROIZK, or TROITSK, *trō-ētsk'*: town of e. Russia, govt. of Orenburg; 420 m. s.w. of Tobolsk.—Pop. (1884) 13,000.

TROJAN, n. *trō'jăn*: an inhabitant of anc. Troy; *familiarly*, a courageous fellow: ADJ. pert. to anc. Troy (q.v.).

TROLL, v. *tröl* [Ger. *trollen*, to roll, to troll: Low Ger. *drulen*, to roll: Swiss, *trohlen*, to thunder, to roll: Norw. *trulla*, to trundle: Low Ger. *trül*, anything of a rounded form: W. *trollo*, to trundle, to roll]: to roll or trundle; to move or utter volubly; to turn; to drive about; to sing the parts of in succession, as of a round; to draw on; to fish with a rod having the line running on a reel near the handle: N. a reel at the handle of a fishing-rod round which the line is rolled; a song the parts of which are sung in succession. TROLL'ING, imp.: ADJ. rolling; driving about; fishing with a rod and reel; more particularly, fishing by dragging a long line with a hook and fly behind a boat which is pulled or sailed at a brisk pace, as in *trolling* for mackerel. TROLLED, pp. *tröld*. TROLL'ER, n. *-ér*, one who trolls. To TROLL or TROWL THE BOWL, to push the bowl round. TROLLEY, or TROLLY, n. *tról'li*, a kind of truck which can be tilted over by removing pins which attach it to the frame, and used for running on tracks, as with railway materials, etc.; a large, flat, heavy cart without sides. TROLLEY, n. grooved metal wheel for rolling in contact with an electric conductor overhead or underground (the trolley-wire), to convey the current to a motor-car. Colloq. the T. system; a road-operated on that system; or a car pertaining to such a road; usually with the definite article. To TROLL A SONG, to roll it out with rise and fall of the voice [probably the equivalent of Swiss *tralallen*, to sound notes without words—from a representation of the notes by the syllables *tra-la-la*].

TROLL, n. *tröl* [Icel. *troll*; Dan. *trolld*, a hobgoblin]: in *Scand. myth.*, a supernatural being superior to man in strength and stature, but much beneath him in mind; in the folk-lore of Iceland, one of a race of giants; in later Norse story, a diminutive sprite, inhabiting gorgeous apartments in the interior of hills. In modern Denmark the term is indiscriminately applied to all hobgoblins, imps, and spirits of the *brownie* type.

TROLLOP—TROLLOPE.

TROLLOP, n. *tröl'lop* [from Eng. *troll*, to roll or trundle: Scot. *trollop*, to hang in a wet state]: a strolling loitering woman; a woman loosely and negligently dressed; a draggle-tail; a drab.

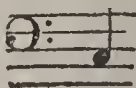
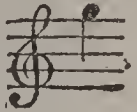
TROLLOPE, *tröl'öp*, **ANTHONY**: English novelist: 1815, Apr. 24—1882, Dec. 6; b. London; second son of Mrs. Frances Trollope. He was educated at Winchester and Harrow. While filling a responsible official situation in the post-office, he found or made leisure to amuse the public with a long series of novels, of remarkable merit. The first work which attracted attention, *The Warden*, 1855, was followed by a continuation, *Barchester Towers*, which is perhaps the cleverest of all his books. In rapid succession came *Doctor Thorne*, *The Bertrams*, *The Three Clerks*, *Castle Richmond*, *Framley Parsonage* (originally pub. in the *Cornhill Magazine*), *The Kellys and the O'Kellys*, *Orley Farm*, *The Small House at Allington* (contributed to the *Cornhill Magazine*), *Rachel Ray*, *Miss Mackenzie*, *Can You Forgive Her?* *Ralph the Heir*, *The Golden Lion of Granpere*, *Ayala's Angel* (1881). Besides these, T. published volumes on *The West Indies and the Spanish Main*, on *North America* (1862), on *Australia* (1873), and on *South Africa* (1878), a *Life of Cicero* (1881), and sketches of *Thackeray* (1879) and *Palmerston* (1882). His *Autobiography* appeared 1883. T. sketches the superficial aspects of society with a charming lightness, and his works are unfailingly agreeable and amusing.

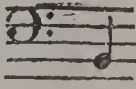
His elder brother, **THOMAS ADOLPHUS T.**, has lived for many years at Florence, and is favorably known by his *Girlhood of Catherine de Medici*; *A Decade of Italian Women*; and a number of novels such as *La Beata*; *Marietta*; *Lindisfarn Chase*; *Gemina*; *The Garstangs*; *The Dream Numbers*. He has written a *History of Florence* and *Life of Pius IX*.

TROLLOPE, **FRANCES (MILTON)**: novelist and miscellaneous writer: 1780–1863, Oct. 6: b. Heckfield, Hampshire, England; daughter of an English clergyman. In 1809 she was married to Anthony T., barrister at-law. In 1829 she came to the United States, where, during a 3 years' residence (in Cincinnati, O.), she amassed the materials of her first book, *Domestic Life of the Americans*, 1832, which attracted great attention, and revealed the American sensitiveness of that period by the indignation which it caused: it would now excite rather amusement. From this time, the literary activity of Mrs. T. was uninterrupted, and her name became notable. Novels of society and impressions of travel make up the sum of her works. Of her novels the most successful is, perhaps, *The Widow Barnaby* (3 vols. 1839), with its sequel, *The Widow Married* (3 vols. 1840); followed by *The Barnabys in America, or Adventures of the Widow Married*. Mrs. T. was a woman of talent, and her works show shrewd observation and true (though at times somewhat coarse) humor. They were popular in their day, but are now almost forgotten. During her later years much of her time was passed in Italy, where her eldest son Thomas Adolphus T., had made his abode. She died at Florence.

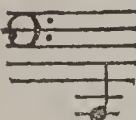

TROMBONE—TROMP.

TROMBONE, n. *tröm'bôn* [It. *trombone*—from *tromba*, a trumpet (see **TRUMPET**)]: large deep-toned brass instrument, of the trumpet species, consisting of two separate parts, so constructed that the two ends of one fit into those of the other, and consequently, by sliding one part in or out, the tube through which the air passes may be shortened or lengthened, and the pitch changed at pleasure. Three kinds of T. are in general use, differing in pitch: the *Alto*

Trombone, with a compass from  to  ;

the *Tenor Trombone*, with a compass from  to

 ; and the *Bass Trombone*, with a compass from

 to  . The music for these instruments

is written on the alto, tenor, and bass clefs respectively. There is also a *double-bass* T., rarely used. The T. judiciously employed, is very effective in an orchestra—the tone being grander and more powerful than that of the trumpet.

TROMOMETER, n. *trö-möm'ě-tër* [Gr. *tromos*, a trembling; *metron*, a measure]: an instrument for measuring earth-tremors, usually by observation of the motion of pendulums.

TROMP, *trömp*, CORNELIS VAN: Dutch admiral: 1629, Sep. 9—1691, May 29; b. Rotterdam; son of MARTIN HARPERTZON T. (q.v.). He became vice-admiral at the age of 21 yrs., having already gained distinction in actions in the Mediterranean against corsairs and the English. When the Dutch fleet under Opdam was defeated off Solebay by the English, Van T. made a masterly retreat, 1665. He served again with distinction in the war of 1673. Afterward he commanded the navy of Denmark.

TROMP, *trömp*, MARTIN HARPERTZON, *här'pért-zôn*: famous Dutch admiral: 1597–1653, July 29; b. Briel, s. Holland. When a boy, he went to sea with his father, commander in the Dutch navy. In an engagement with an English cruiser off the coast of Guinea, his father was killed, and young T. made prisoner, and compelled to serve as cabin-boy for two years and a half. In 1622 he entered the navy and served as lieut. on a ship of the line, two years later receiving command of a frigate. In 1629 the famous Admiral Peter Heijz (q.v.) took command of T.'s ship, and was killed by his side. Disgusted by some real

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or imaginary slight, T. retired about this time from the service. In 1637 he returned, was created lieut.-admiral, and appointed to command a squadron of 11 ships. He now prosecuted a vigorous naval war against the Spaniards, taking in one celebrated action. 1639, Oct. 21, 13 richly laden galleons. But the events which rendered his name famous occurred 1652-3, during hostilities between England and Holland. In 1652, May 19, he encountered the Eng. fleet under Blake (q.v.). The Dutch were defeated with the loss of two ships, and T. was for a while superseded by Ruyter and De Witt. He was soon afterward reinstated, and Nov. 29 again encountered Blake in the Strait of Dover, and was so successful that the English fleet was forced to retire; T. sailing up the Channel with a broom at his mast-head, to denote that he had swept his foes from the seas. Before long, however, the English returned, and Monk and Deane having united with Blake, they attacked T. near Portland, 1653, Feb. 16, and defeated him, though only after a contest memorable for obstinacy. It lasted three days, at the close of which the English had taken or destroyed 11 ships of war and 30 merchantmen, killed 2,000 of the enemy, and captured 1,500. June 2 and 3 following, another battle took place, off North Foreland, 6 Dutch vessels being captured, 11 sunk, and the remainder driven into Calais roads. July 29 the warfare was again renewed off the coast of Holland, when the Dutch lost 30 men-of-war, and Admiral T. was killed.

T. was a thorough seaman, homely in manner, benevolent in disposition, and enthusiastic in his calling. He was buried at Delft with great pomp and solemnity.

TROMPE, or **TROMP**, n. *trömp* [F. *trompe*; It. *tromba*, a trumpet (see **TRUMPET**): furnace-blower; blowing apparatus used in the Catalan forge. Water is made to fall through a pipe that has side-openings through which air is sucked—thus producing a continuous air-current, which is conveyed to the forge. **TROMP'IL**, n. *-il*, an aperture in a tromp.

TROMSÖE, *tröm'sö-éh*: small island off the n.w. coast of Norway, in the amt or county of T., between Kvalö and the mainland; is 4 m. long, and about 1½ m. broad. On the e. side of the island is the small but thriving town of T., cap. of the amt, and seat of a bp. Russian vessels from Archangel and the White Sea bring corn, which they exchange for dried fish. The herring-fishery is very productive, and there is some trade in bear-skins and furs. —Pop. of amt (1882) 60,000; of town (1882) 5,409.

TRON, n. *trôn*, or **TRONE**, n. *trôn* [mid. L. *trona*, a steelyard—from L. *trutīna*; Gr. *trutanē*, a balance: comp. Icel. *trana*, a crane: Gael. *trom*, heavy, weighty]: a steelyard-balance: specifically, in Scotland, a heavy beam or balance set up in the market-place, and employed in weighing heavy wares; hence, when applied to weights, T. means, of the standard employed in the public markets. The T. lb. contains 20 oz., but, from the custom of giving 'one in' to the score, was generally reckoned at 21 oz. But the value varied in different market-towns from 20 to 28 oz. The

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later T. stone or standard weight contains 16 T. lbs., each lb. 16 T. oz., and each T. oz. 16 drops; the T. lb. is estimated to equal 1.3747 lbs. avoird. TRON CHURCH, the church in the market-place.

TRONA, n. *trō'nă* [of n. African origin]: a crude sesquicarbonate of soda, occurring in crystalline incrustations in the deserts of Africa and Asia, and in the dried-up lakes and river-courses of S. America, where it is called *urao*.

TROND'HJEM: see THRONDHJEM.

TROON, *trôn*: important seaport, county of Ayr, Scotland; 8 m. s.w. of Kilmarnock, and 6 n. of Ayr. The greater part of the town (not older than the 19th c.) occupies a bare and level promontory; but along the strand of Ayr Bay stretches a row of handsome villas and cottages nearly half a m. long, occupied chiefly by summer visitors. The place is yearly becoming more attractive as a sea-coast residence, on account of its salubrity and splendid beach. The harbor occupies the extremity of the promontory, is secure and spacious, and much frequented. The principal exports are coal and iron, of which Ayrshire yields an abundant supply.—Pop. 2,383.

TROOP, n. *trôp* [Sp. *tropa*; F. *troupe*; It. *truppa*—from mid. L. *tropus*, a troop: perhaps from L. *turba*, a crowd: comp. W. *torp*, a round mass]: a number of persons in a body or line; a multitude; a division of a regiment of cavalry under a captain, two troops (of 60 troopers each) making a squadron; any band or company, as of actors: V. to collect in numbers; to march in a body or in company with some degree of haste. TROOP'ING, imp. TROOPED, pp. *trôpt*. TROOP'ER, n. *-ér*, a horse-soldier. TROOPS, n. plu. *trôps*, soldiers in general; an army. TROOP-SHIP, a ship for the conveyance of soldiers by sea. TROOPING THE COLORS, a ceremony performed at the public mounting of garrison guards. TROOPS OF THE LINE, all infantry regiments except the foot guards.

TROOPIAL, or TROUPIAL, *trô'pî-al*: name of various birds, rarely used, derived presumably from their associating in flocks or *troops*, and probably applied first to some birds of genus *Cassicus*, but used also for members of the family *Icteridæ*. It has sometimes been given to the cow-bird of N. America. See COW-PEN BIRD.

TROOST, *trôst*, GERARD: naturalist: 1776, Mar. 15—1850, Aug. 14; b. Bois-le-Duc, Holland. He studied in the universities of Amsterdam and Leyden. Enabled by the munificence of King Louis Bonaparte to pursue nat. hist. studies in Paris, he there translated Humboldt's *Aspects of Nature* into Dutch. He settled in Philadelphia, Penn., 1810, and was one of the founders of the Acad. of Nat. Sciences there 1812; became prof. of mineralogy in the Philadelphia Museum, prof. of chemistry and mineralogy in Nashville (Tenn.) Univ. 1827, Tenn. state geologist 1830-49. He made the largest mineral and geological collections of his time in the United States.

TROPÆOLUM—TROPHI.

TROPÆOLUM, n. *trō-pē'ō-lŭm* [Gr. *tropaion*, a trophy—in allusion to the resemblance of the leaves to bucklers or shields, and the flowers to helmets]: extensive genus of plants, mostly climbing, with orange-red or yellow flowers; nat. order *Tropæolaceæ*, and allied to *Balsaminaceæ* and *Geraniaceæ*. The species are not numerous, and all are natives of S. America. They are smooth herbaceous plants, somewhat succulent, with acrid or pungent taste, trailing or twining stems, and alternate simple or divided leaves, destitute of stipules. The species of the genus *T.* form the greatest part of the order, and have usually simple peltate leaves. *T. majus* is the well-known INDIAN CRESS, whose unripe fruit is often used to give pungency to pickles, under the very mistaken name *Nasturtium*—the *Nasturtium* being a genus of Water-cresses of a different family, *Cruciferae*, and including the Horse-radish. The *T.* is a native of Peru, and has long been much cultivated in Britain as an ornamental plant, climbing among bushes or on trellises, and taking hold by the curving stalks of its leaves; its stems six to ten ft. long, foliage abundant; flowers large, orange, or dark red. The young leaves are used in salads. The Indian cress is really a perennial, though it flowers a few months after sowing, and in Britain is always treated as an annual, not enduring the winter. *T. minus* is very similar, but of weaker growth, and its flowers are smaller. *T. peregrinum*, though much more recently introduced than the Indian cress, has become almost as common, and is a great favorite in window-gardens: it is popularly called the CANARY PLANT. Its stems are long and slender, and it speedily covers a high trellis. Several other species are frequent and fine ornaments of gardens and greenhouses. The tubers of *T. tuberosum* are eaten in Peru: their taste is peculiar.

TROPE, n. *trōp* [F. *trope*—from L. *tropus*; Gr. *tropos*, a trope—from *trepō*, I turn: It. *tropo*]: in *rhet.*, a change in the signification of a word from a primary to a derived sense; a word or expression used in a sense different from that which it usually signifies; a word used figuratively.

TROPICAL, a. *trō-pī-kāl*, figurative, as the use of a word.

TRO'PICALLY, ad. *-lŭ*. **TRO'PIST**, n. *-pīst*, one who deals in tropes. See also **TROPOLOGY**.

TROPHI, n. plu. *trō'fī* [Gr. *trophos*, a feeder—from *trephein*, to feed]: those parts of the mouth in insects which are concerned in the acquisition and preparation of food.

TROPHIC, a. *trōf'ik*, or **TROPH'ICAL**, a. *ī-kāl*, connected with nourishment; nourishing; nutritious. **TROPHOSOME**, n. *trōf'ō-sōm* [Gr. *sōma*, body]: the collective assemblage of the nutritive zooids of any hydrozoon.

TROPHONIUS—TROPIC-BIRD.

TROPHONIUS, *trō-fō'nī-ŭs*: in Greek mythology, a skilful architect; son of Erginus, King of Orchomenus, or of Apollo. With his brother, Agamedes, he built the temple of Delphi and the treasury of King Hyrieus in Bœotia. After death he was worshipped as a hero, and had a celebrated oracle in a cave at Lebadeia (Livadia) in Bœotia. 'The entrance to the oracle was a very narrow aperture on the summit of a mountain, protected by a marble parapet about two cubits in height, and by brazen spikes above it.' The votary who wished to enter the 'Cave of Trophonius, to consult the oracle, after preparing himself for several days by purification and sacrifice, lay on his back, put his feet into the cave, and, caught by some unseen force, was pulled inside.

TROPHOSPERM, *n. trŏf'ō-spĕrm* [Gr. *trophos*, a feeder; *sperma*, seed]: in *bot.*, the placenta.

TROPHY, *n. trŏ'fĭ* [F. *trophée*, a trophy—from L. *tro-pæum*; Gr. *tropaion*, a sign and memorial of victory, consisting originally of a trunk of a tree on which were fixed the arms, shields, helmets, etc., taken from the enemy—from *tropē*, a turning, a putting to flight—from *trepō*, I turn: It. *trofeo*]: anything taken from an enemy which can be shown as evidence of victory; something preserved as a memorial of victory; articles of produce or manufacture artistically arranged and exhibited. **TRO'PHIED**, *-fĭd*, adorned with trophies.—A *Trophy* was originally a memorial of victory erected on the spot where the enemy had turned to flight. Among the Greeks (except the Macedonians, who erected no trophies), one or two shields and helmets of the routed enemy, placed on the trunk of a tree, served as the sign and memorial of victory. After a sea-fight, the trophy consisted of the beaks and stern-ornaments of the captured vessels, set up on the nearest coast. It was considered wrong to destroy such a trophy; and equally wrong to repair it, when it had fallen down through time, for animosity ought not to be perpetual. In early times, the Romans never erected trophies on the field, but decorated the buildings at Rome with the spoils of the vanquished. In later times, pillars and triumphal arches were reared to commemorate victories.

TROPICAL, *a. trŏ'pĭ-kāl*: figurative: see under **TROPE**.

TROPICAL, *a. trŏp'ĭ-kāl*: pertaining to the tropics: see under **TROPICS**.

TROPIC-BIRD: bird of genus *Phaëton*, ranked by some in family *Pelecanidae*, by others in *Laridae*. The bill is strong, pointed, and almost arched; the head completely feathered; wings are long; tail is short, except two very long and slender feathers. Only two species are known, both tropical, and often seen far from land. The **COMMON TROPIC-BIRD** (*P. athereus*) is about the size of a partridge, white, with curved lines of black on the back; some of the quill-feathers black, tipped with white. It is found in the Atlantic; while in the Indian and Pacific oceans the other species (*P. phœnicurus*) appears, of pale rose-color, with black wing coverts, and the long feathers of the tail red. The T.-B. breeds on high cliffs.

TROPICS—TROTTOIR.

TROPICS, n. plu. *trōp'īks* [L. *tropicus*; Gr. *tropikōs*, of or belonging to a turn or turning—from *trepō*, I turn: F. *tropique*: It. *tropico*]: the two circles of the celestial sphere, one n. and the other s. from the equator at a distance of about $23^{\circ} 28'$, and parallel to it, within the limits of which the sun moves in his yearly course—the one n. of the equator, the *Tropic of Cancer*, the one s., the *Tropic of Capricorn*; the region between the tropics: see **ARMILLARY SPHERE**. The *tropics* mark out the limits of the torrid zone, or that portion of the earth's surface over any part of which the sun is vertical twice in the year. Their distance from the equator is not absolutely fixed, but the limits of their variation are very narrow. For 1882, Jan. 1, the *Nautical Almanac* gives their position as $23^{\circ} 27' 16'' \cdot 6$ n. and s. respectively. **TROPICAL**, a. *-ī-kāl*, or **TROP'IC**, a. *-īk*, pertaining to or incident to the tropics; being within or near the tropics. **TROP'ICALLY**, ad. *-lī*.

TROPOLOGY, n. *trō-pōl'ō-jī* [Gr. *tropos*, a trope; *logos*, discourse]: a rhetorical or figurative mode of speech. **TROPOLOGICAL**, a. *trō-pō'lōj'ī-kāl*, varied or expressed by tropes; figurative.

TROPPOU, *trōp'pow*: town, cap. of Austrian Silesia, on a tributary of the Oder, 184 m. n.e. of Vienna by railway, near the Prussian border. It is the seat of the provincial govt., and has a castle, cathedral, several palatial buildings, churches, and public schools, a library of 32,000 vols., a museum of Silesian antiquities, important manufactures of machinery, cottons, linens, and beet-root sugar; and active transit trade.—Pop. (1880) 20,562; (1888) 22,500.

TROT, n. *trōt* [F. *trotter*; It. *trottare*, to trot: Gael. *trot*, to trot: Ger. *trott* or *trapp*, the sound of the footfall: W. *trotio*, to trot: Ger. *treten*, to step]: the pace of a horse or other quadruped faster than walking, the limbs moving in pairs diagonally, but not quite simultaneously; an affectionate name for a child; a contemptuous name for an old woman: V. to move faster than a walk; to cause to move fast. **TROT'TING**, imp.: **ADJ.** moving with a trot. **TROT'TED**, pp. **TROT'TER**, n. *-tēr*, a quadruped that trots. **TROT'TERS**, sheep's or pigs' feet cooked.

TROTH, n. *trōth* [AS. *treowthu*, truth—from *treowe*, true: Icel. *tryggth*, troth, truth (see **TRUE**)]: faith; fidelity; truth. **TROTH'LESS**, a. *-lēś*, in *OE.*, faithless. **TROTH-PLIGHTED**, a. having fidelity pledged.

TROTTOIR, n. *trōt-wâr'* [F.]: the footway on each side of a street; the foot-pavement.

TROUBADOUR.

TROUBADOUR, n. *tró'bă-dôr'* [F. *troubadour*—from Prov. *trobador*—from *trobar*, to find, to invent: Sp. *trobador*; It. *trovatore*, a troubadour: F. *trouver*; Sp. *trovar*; It. *trovare*, to invent, to compose—perhaps from mid. L. *tropus*, a song, singing, in *classical L.*, a trope (see TROPE)]: one of a school of lyric poets who flourished in the eleventh, twelfth, and thirteenth centuries in the s. of France, n. of Spain, and n. of Italy. In Provençal poetry (see TROUVÈRE), a T. was a polished and cultivated poet—what the Germans call a *Kunstdichter* (art poet)—who did not make a trade of his muse; as distinguished from the musician and jongleur, who wandered about the country singing for money. This distinction only gradually showed itself. At first, all classes of the community were nearly equally rude, and what pleased the peasant in the shape of song, pleased the prince also; but by degrees, a superior refinement and sensibility manifested themselves in the tastes and manners of courts, and this superiority found poetical expression in a more artistic verse. Great nobles, princes, and kings who practiced verse-making for their pleasure, or out of chivalrous gallantry, were always called troubadours; while inferior knights, court-attendants (M. Lat. *ministeriales*; hence *menestrels*, minstrels), and even citizens and serfs who lived by their art, or at least took money for the exercise of it, were called sometimes troubadours, sometimes jongleurs: see MINSTREL: also ROMANCE: ROMANIC LANGUAGES. The more celebrated troubadours had one or several such jongleurs in their service, as it was considered *infra dig.* for a poet to be his own fiddler. This new T. poetry (*art de trobar*), which was *lyrical*, while the popular minstrelsy was mainly of the *epic ballad* sort, exercised considerable influence on the advancement of literature and culture generally; yet those who practiced it never formed themselves into a guild, or into special schools, but preserved a certain individualism, which gives picturesqueness to the outlines of their history. At all the courts (great and small) in s. France, n. Spain, and Italy, they were esteemed a brilliant ornament of society; princes and fair dames (often themselves troubadours) were proud of their praise, or dreaded the raillery of their satiric muse; while, on the other hand, the majority of the troubadours gladly attached themselves to the court of a great prince or noble, sometimes praising their master in *sirventes* (service-songs), sometimes censuring him, but at any rate, always selecting some lady as the 'mistress of their heart,' to whom they, under a general or allegorical name, addressed their love-songs (*cansos*), and whose cruelty they bewailed in songs of lamentation (*planes*), or whose death they mourned in threnodies. Although the 'love-service' of the troubadours was often merely artificial gallantry, yet frequently the sport passed into fatal earnest, with consequences of adultery, murder, and revenge.

When, as often happened at great court-festivals, several troubadours were present, they often indulged in competitions or verse-battles (*tensons*) among themselves, for

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gratification of the high society assembled; mostly on questions selected by the ladies from the 'Laws of Love,' one or more of these ladies sitting as umpires at such poetic jousts, and deciding who were the victors. But though the troubadours as a rule monotonously confined themselves to themes of gallantry, yet sometimes their muse, especially in its satiric moods, ventured into higher regions, and glanced at the general conditions of society, or the graver evils of the times—as the persecution of the Albigenses; the degeneracy of the clergy; the diminishing zeal for the Crusades, etc.; or they even descended to depict the life of the peasantry, and sang their adventures with shepherdesses, etc. in *pastoretas* and *vaqueyras*. The most illustrious patrons of the troubadour poetry were the counts of Provence, particularly Raimund Berengar III. (1167–81), Alphonse II. (1196–1209), and Raimund Berengar IV. (1209–45); the counts of Toulouse, as Raimund de St. Gilles, who joined the ranks of the Crusaders 1096. Raimund V. (1148–94), and Raimund VII. (1222–49); Richard *Cœur de Lion* of England, himself a T.; Eleanor, wife, first of Louis VII. of France, afterward of Henry II. of England; Ermengarde, Viscountess of Narbonne; the kings of Aragon, as Alfonso II. (1162–96), Pedro II. (1196–1213), and Pedro III. (1276–85); the kings of Castile, as Alfonso IX. (1188–1229), and especially Alfonso X. (q.v.), surnamed the Wise; several Italian princes, as Bonifacio, Count of Montferrat, and after 1204 king of Thessalonica; and Azzo VII. of Este (1215–63). These names also indicate the extent of territory on which the T. poetry was cultivated—viz., Provence, Toulouse, Poitou, Dauphiné, or briefly France s. of the Loire; Catalonia, Valencia, and Aragon in Spain; and part of upper Italy. It lasted about 200 years (1090–1290); and three periods can be distinguished in its history: (1) The period of its genesis, or its development out of mere popular minstrelsy into artistic poetry (1090–1140); (2) its golden age (1140–1250); (3) the period of its decline (1250–90). The second of these periods shows the loftiest expression of ideal chivalry and gallantry, and the most perfect development of artistic form. The last period was marked by an increasing serio-didactic tendency, and degeneracy in poetic art. Thus the poetry of the troubadours rose, and ruled, and fell with that courtly chivalry which was its inspiration.

The long list of troubadours begins with GUILLEM IX., Count of Poitiers (1087–1127): his life and works appear to have been equally immoral.—BERNARD DE VENTADOUR (1140–95), one of the first troubadours of the golden age, was the son of a poor serf of Vicomte Ebles II. of Ventadour: he celebrated in fiery and delicate strains the charms of Ebles's wife, Agnes de Montluçon, and of his later patronesses, Queen Eleanor, Joanna of Este, etc.—MARCABRUN (1140–85), a foundling, was murdered by the castellan of Guian for an exercise of his fatal gift of satire: he is reckoned the inventor of the art-song (*Cansós*). --JAUFRE RUDEL, Prince of Blaya (1140–70), is famous

for his languishing love-songs and for his romantic passion for the Countess of Tripoli, whom he never saw till he was at the point of death.—PEIRE D'Auvergne (1152-1215), produced songs more remarkable for artistic finish than for poetic inspiration.—GUILLEM DE CABESTAING (1181-96), was famous for his tragic love for the wife of his lord, Raimon de Roussillon.—RICHARD THE LION-HEART'S song composed during his captivity in Austria is widely known; and the songs of GUIRANT DE BORNEIL (1175-1220) have a manly ring; but perhaps the most celebrated of the whole fraternity was PEIRE VIDAL (1175-1215), wondrously endowed with poetic gifts, but whose mad, wasteful, immoral life makes his sanity doubtful.—BERTRAND DE BORN (1180-95), celebrated as warrior and poet, produced songs mostly martial and patriotic.—FOLQUET DE MARSEILLE (1180-1231), after wasting his youth in amorous gayeties, in a fit of grief for the death of one of his many mistresses, entered the priesthood, became bp. of Toulouse, and persecuted the Albigenses with fanatical zeal: his 25 songs are of an impassioned nature.—RAMBAUT DE VAQUEIRAS (1180-1207), native of s. France, son of a knight, was so great a favorite with Bonifacio II., Marquis of Montferrat, that the marquis tolerated his sister's intimacy with the poet; he accompanied his patron to the East, and probably fell with him fighting against the Bulgarians.—PEIROT (1180-1225) produced some of the finest love-songs of the troubadours.—THE MONK OF MONTAUDON (1180-1200) is a T. whose proper name is not known: he was of a noble family in Auvergne, and became prior of Montaudon; but led the free life of a wandering poet: his songs are full of personalities against his brother troubadours—very cynical and very caustic.—ARNAULT DANIEL (1180-1200), nobleman of Riberac, in Périgord, whom Petrarch calls *il grande maestro d'Amore*: Dante also celebrates his genius.—GAUCELM FAIDIT (1190-1240), who left his wife, and, as a T., sang the praises of Countess Marie of Ventadour; afterward, in revenge for her prudence, entering into intrigues with other women.—RAIMON DE MIRAVOL (1190-1220), one of the most lovable of the troubadours, though bitterly abused by the women poetesses of his time.—SAVARIE DE MAULEON (1200-30), French baron, grand seneschal of Aquitania; noted for his *Tenzone*.—PEIRE CARDINAL (1210-30), son of a knight, and who travelled with his jongleur from court to court, and having Jago I. of Aragon as his great patron: he satirized the nobles and clergy.—GUIRAUT RIQUIER (1250-94), native of Narbonne, last representative of the troubadours, and whose most distinguished patron was Alfonso X. of Castile: his poems, full of complaints of the disrepute into which his order had fallen, are the swan-song of T.-poetry.

See Diez, *Leben und Werke der Troubadours* (Zwickau 1829); Fauriel, *Histoire de la Littérature Provençale*, 3 vols. (Par. 1846); Galvani, *Osservazioni sulla Poesia de' Trovadori* (Modena 1829), and *Fiore di Storia letteraria e cavalleresca della Occitania* (Milan 1845); De Laveleye, *Histoire de la Langue et de la Littérature Provençale* (Bruss. 1845);

Mahn, *Die Werke der Troubadours* (Berl. 1846), and *Die Biographien der Troubadours* (Berl. 1853); Brinckmeier, *Blumenlese aus den Werken der Troubadours* (Halle 1849), and *Rügelieder der Troubadours* (Halle 1846); Kannegiesser, *Gedichte der Troubadours* (Tüb. 1852), and *Ungedruckte Provenzal. Lieder* (1853); Bartsch, *Grundriss zur Geschichte der Provenzalischen Literatur* (1872); Bayle, *La Poesie Provençale au Moyen Age* (1876).

TROUBLE, n. *trüb'l* [F. *troubler*—from a supposed mid. L. *turbulārē*, to trouble, to disturb—from L. *turba*, a crowd; Gr. *thorubēō*, I disturb]: disturbance of mind; that which causes agitation or disturbance of mind; distress; anxiety; uneasiness; difficulty; labor or laborious effort: among *miners*, any shifting of the strata of a coal-field by which the regular and continuous working of its minerals is interrupted: V. to disturb; to put into confused motion; to grieve; to make uneasy; to molest; to engage overmuch; to give occasion of labor to, as, 'I shall not *trouble* you to write'; in *OE.*, to disorder. **TROUB'LING**, imp. *-līng*: N. the act of molesting or annoying; the act of afflicting. **TROUBLED**, pp. *trüb'ld*: **ADJ.** disturbed; disordered. **TROUB'LER**, n. *-lēr*, one who troubles. **TROUBLESOME**, a. *trüb'l-sūm*, causing annoyance; tiresome; giving inconvenience to; harassing; importunate; teasing; irksome; vexatious. **TROUBLESOMELY**, ad. *-lī*. **TROUB'LESOMENESS**, n. *-nēs*, the state or quality of being troublesome; irksomeness. **TROUB'LOUS**, a. *-lūs*, agitated; full of trouble or disorder; causing great anxiety and distress.—**SYN.** of 'trouble, v.': to disturb; annoy; perplex; afflict; grieve; fret; distress; busy; tease; vex; harass;—of 'trouble, n.': molestation; obstruction; inconvenience; distress; grief; sorrow; calamity; misfortune; adversity; embarrassment; misery.

TROUGH, n. *trōf* [Icel. *trog*; Dan. *trug*; Wal. *troc*; Ger. *trog*, a trough]: a long hollow vessel of wood, stone, or metal, open at the top, for holding feeding-stuffs for animals, etc.; the channel that conveys water, as to a mill; in *geol.*, any sudden depression of strata by which they are made to assume a basin-shaped arrangement. **TROUGH OF THE SEA**, the long hollow between two waves. **TROUGH-JOINT**, in *geol.*, the fissure or joint frequently found to pass through the middle of the curvature of any sudden depression of strata.

TROUL, v. and n. *trowl*: same as **TROLL** 1 (q.v.).

TROUNCE, v. *trouns* [OF. *tronce*, a piece of wood; *troncer*, to mutilate, to tear in pieces: Sp. *tronzar*, to shatter: F. *tronçon*, a truncheon or short staff (see **TRUNK**)]: to beat with a truncheon: to cudgel; to punish severely; to scold or reprimand; in *OE.*, to defeat utterly; to discomfit. **TROUNC'ING**, imp. **TROUNCED**, pp. *trounst*.

TROUP, *trōp*, **ROBERT**, LL.D.: lawyer: 1757–1832, Jan. 21: b. New York. He graduated at Columbia College, and then studied law; entered the army as lieut. 1776; was made prisoner in the battle of Long Island, and was exchanged 1777; was aide to Gen. Gates at Saratoga. T. was several years judge in N. Y., and member of the legislature. He wrote occasional pamphlets on political issues.

TROUPE—TROUSSEAU.

TROUPE, n. *tróp* [F. *troupe*—from mid. L. *tropus*, a company (see **TROOP**): a company, especially used of stage-players, circus-performers, minstrels, and the like; a band; a troop.

TROUS-DE-LOUP, n. *tró'dě-ló'* [F. *trou*, hole; *de*, of, *loup*, wolf]: *literally*, wolf-holes; holes and pitfalls dug in the form of inverted cones, about 6 ft. deep and $4\frac{1}{2}$ in. in diameter, having pointed stakes fixed in the bottom, and almost reaching the top. They are placed often thickly about the glacis and approaches to a fortress; the object being to break the ranks and otherwise disorganize an attacking force.

TROUSE, n. *trouz* [Gael. *triubhas*; Ir. *trius*, breeches (see **TROUSERS**): in *Scot* and *OE.*, breeches and stockings in one piece—an anc. Irish dress; trousers. **TROUSED**, a. *trouz'd*, wearing trousers.

TROUSERS, n. plu. *trou'zérz* [Gael. *triubhas*, trows, trousers: W. *trws*, covering, dress: F. *trousse*, a truss, a bundle, breeches—from *trousser*, to tuck, to fasten up (see **TRUSS**): a garment, usually called a 'pair of trousers,' worn by men and boys, extending from the waist to the ankles, covering the lower part of the trunk, and each lower limb separately; pantaloons. **TROU'SERING**, n. *-zér-ing*, cloth used for making trousers.

TROUSSE, n. *trous*: the loppings from growing timber; the old spelling of **TRASH** (q.v.).

TROUSSEAU, n. *trós-sō'*, **TROUSSEAUX**, n. plu. *trós-sēz'* [F. *trousseau*, a small bundle, an outfit—from *trousse*, a truss, a bundle (see **TROUSERS**): comp. Gael. *trusadh*, a gathering, a collection]: *literally*, 'a bundle'; the outfit of a woman about to be married, consisting of personal clothing, trinkets, presents, and the like; a bride's clothes.

TROUT.

TROUT, n. *trowt* [AS. *truht*; F. *truite*; It. *trota*—from L. *tructa*; ML. *trutta*, a trout: Gr. *trōktēs*, a voracious sea-fish—from *trōgein*, to gnaw, to bite—*lit.*, 'the nibbler']; the popular name of many species of the genus *Salmo*, as characterized by Cuvier, but now, in N. America, referred to two groups. The first, left under the genus *Salmo* (see SALMON), includes the Atlantic Salmon and the black-spotted species of the west, the Rainbow T. (*S. irideus*) of the Pacific slope, the Rio Grande T. and two closely related forms of the Rocky Mt. region, the Steel-head of the Columbia, the Quinuat or California T. and its allies (genus *Oncorhynchus*), and the common Black-spotted T. (*S. Clarkii*) of the upper Missouri river. The second group includes the Chars, or Red-spotted T. of various species, and the gray-spotted species known as Salmon T. or Lake T.—all of this group placed in the genus *Salvelinus*. Of this group are the Lake T. (*S. Namaycush*), resembling our Brook T. (*S. fontinalis*) and, like it, very variable, but sometimes attaining 120 lbs.; and the Dolly Varden T. (*S. malma*), known in Siberia as the Malma or Golet, and ranging in salt and fresh water from the upper Sacramento to Kamtchatka, and variously known as Bull T., Salmon T., Speckled T., etc.

In Great Britain the name is given to some of the silvery species, migrating to the sea, and to all the yellow species, which constantly inhabit fresh waters. For the former, see SALMON: the present article is concerned with the latter.

Trouts are found in almost all lakes and rivers of the temperate and colder parts of the n. hemisphere. The COMMON T. (*Salmo fario* or *Salar Ausonii*) is widely diffused in the e. hemisphere, abounding in almost all lakes and rivers of the Brit. Islands and of n. Europe. It is found even in very small streams, and almost to their mountain sources, but attains its largest size where there is considerable depth of water and abundance of food. An instance is on record of a T., caught in England, in a branch of the Avon at Salisbury, weighing 25 lbs.; but such a size is very rare; and even in ponds where T. are regularly fed, they seldom exceed 10 lbs. The color is more or less yellow, but the tint varies much in the T. of different waters, sometimes passing into greenish black or violet. On the back and upper part of the sides are numerous spots of black and red; the belly is silvery white. The spots on the sides vary much. The fins are light brown; the dorsal fin and tail with numerous darker brown spots. The varieties which the Common T. exhibits in tints and spots has led to the erroneous supposition that there are several distinct species. The T. of a river with a muddy bottom are very different from those of a clear stream; and those of a stream darkly colored by moss are easily distinguished. The tint of the flesh varies as well as the external colors, being pink in some—the finest for the table—and white in others. It has been found that T. transferred from one locality to another soon change their tints.

TROUT.

The leaping of T. for flies in a summer day or evening is one of the features of many a rural scene. Small T. often throw themselves quite out of the water; the larger ones in general merely rise to take struggling flies from its surface. The angler adapts his lures to the season and the weather. In spring and summer, when the weather is fine, the artificial fly is very successful; bait, generally the worm, is used in wet weather, or when the streams are much swollen by rains. The minnow is a good bait for large T. No bait is more deadly than salmon roe, but the use of it is prohibited by law in Britain, for the sake of the salmon-fisheries.—See ANGLING.

The T. spawns generally in the end of Oct., when the lower jaw of the male becomes elongated, but not so much as in the salmon. The spawn is deposited in the same manner as that of the salmon, in gravelly beds, in running streams; and the T. of lakes ascend streams for this purpose. See PISCICULTURE. The T. grows rapidly when it has abundant food. From instances of individuals kept in wells and ponds, it is known to attain an age of 30 or even 50 years.

Among varieties of the Common T., one called the GILLAROO T. is found in lakes of n. Ireland; it attains a large size, is very thick in proportion to its length, and has much smaller teeth than the ordinary trout.—The LOCH LEVEN T. (*Salmo Levenensis* or *S. cæcifer*) is found in Loch Leven in Scotland, where the Common T. also is found; and is distinguished from it by the more pointed pectoral fins and in other respects.—The GREAT LAKE T. (*Salmo ferox*) is the only other British species: it is found in some larger Brit. and Irish lakes, and in the lakes of Scandinavia, seldom, if ever, ascending rivers, except for a short distance at the spawning season. It attains a weight of almost 30 lbs., is a very powerful, active fish, and tries the skill of the angler in no small degree. It is as greedy as a pike. It differs from the Common T. in the longer muzzle, in the position of the fins, in having the tail square in all stages of growth, and in other characters. Its color is generally deep purplish brown, passing into greenish or grayish yellow on the belly. The spots are large and not numerous. It is taken by night-lines, or by trolling with strong tackle and a small T. or other small fish for bait. Young fish are taken with the artificial fly. The flesh of this species is much inferior in quality to that of the Common T.—Very different from it is the LAKE T. of the Lake of Geneva (*Salmo* or *Fario Lemanus*), a fish of excellent quality, and nearly allied to the Salmon Trout (see SALMON): it ascends the rivers which fall into the lake. TROUT-COLORED, a. white, with spots of black, bay, or sorrel. TROUT-STREAM, a running water or river in which trouts abound. TROUT'LET, n. -lét, or TROUT'LING, n. -ling, a small trout.

TROUVÈRE—TROVER.

TROUVÈRE, n. *tró-vär'*, or **TROUVEUR**, n. *tró-vér'* [F. *trouvère*, a poet—from *trouver*, to find, to invent, to compose (see **TROUBADOUR**, with which it is identical)—*lit.*, one who finds or invents]: one of a class of early descriptive poets, epic in their form and style, who flourished in the n. of France. Like the Troubadour (q.v.) of s. France, he was usually attended by a jongleur, whose business it was to furnish an instrumental accompaniment to the songs which his master composed and sung. Sometimes, but rarely, the T. himself played on a harp. On the other hand, if minstrels and jongleurs were ambitious enough to aspire to original composition—e.g., Adenez le Rois, Raymberth de Paris, etc.—they were nicknamed ‘Bastard Trouvères’ (*Troveor bastart*), or ‘interloping rhymers’ (*Contre-rimoieurs*). This disdainful feeling was not less strong from the fact that the poetry of the trouvères was high in favor at the northern courts, and that even kings and nobles were proud of the ‘accomplishment of verse.’ Among these princely and patrician amateurs were Thibaud of Champagne, King of Navarre; Jean de Brienne; Charles d’Anjou; Henri III. of Brabant; Pierre de Dreux, Count of Brittany, etc. The great patrons of the trouvères were the kings of France and England, the Dukes of Brabant, the Counts of Champagne, Flanders, etc.; while by the Anjou dynasty of the kings of Naples their art was carried into s. Italy, and by Henry of Burgundy into Portugal. Their number consequently became considerable; and there are still reckoned the names and works of more than 150, of whom perhaps the most celebrated is the Castellan de Coucy.—See De la Rue, *Essais Historiques sur les Bardes, les Jongleurs et les Trouvères Normands et Anglo-Normands* (3 vols. Caen 1834); Dinaux, *Trouvères, Jongleurs et Menestrels du Nord de la France et du Midi de la Belgique* (3 vols. Par. 1837–43); Paris, *Le Romancero Français* (Par. 1833); Wackernagel, *Altfranz. Lieder* (1846); Mätzner, *Altfranz. Lieder* (1853); Bartsch, *Altfranz. Romanzen* (1870); Scheler, *Trouvères Belges* (1876).

TROVER, n. *trō-vér* [OF. *trover*; F. *trouver*; It. *trovare*, to find—according to Diez, from mid. L. *turbārē*, to move, to seek for, to find (but see **TROUBADOUR**): the finding of anything: in *law*, (1) the obtaining possession of any goods by finding them, or by various means other than by purchase; (2) a common-law action brought to recover goods from a person to whom they do not belong, but who has in some way obtained possession of them. Such an action was originally founded on the old fiction that the rightful owner had accidentally lost the goods, and the party in possession had found them, and would not give them up to such owner. It is practically an action to try the title to the goods, and therefore is of extensive application in the law of contracts, as well as other branches of law. When, in an action of T., judgment is given for the plaintiff, the defendant must make good the damage and repay the costs of action: the amount of damages is the value of the property when taken by defendant, with interest. When plaintiff is defeated, the defendant recovers costs.

TROW—TROWERS.

TROW, v. *trō* [AS. *treowian*, to trust, to believe; *treowa*, trust, faith (see **TRUE**)]: in *OE.*, to think; to imagine; to conceive; to believe: *trōw* is also used with *I* (expressed or understood) as an exclamation of inquiry or surprise, and is nearly equal to 'I wonder.' **TROW'ING**, imp. **TROWED**, pp. *trōd*.

TROWBRIDGE, *trō'brīj*: ancient town of Wiltshire, England; on a rocky eminence in the valley of the river Mere or Biss, 10 m. s.e. of Bath, about 98 m. w. of London. In the church of St. James, which dates from the 14th c., Crabbe the poet officiated as clergyman 1814-32, and his remains repose under a monument in the chancel. The town, since the reign of Henry VIII., has been the seat of woolen manufactures, much extended in recent years; cassimeres, kerseys, tweeds, and woolen cloths of the best qualities are made. Many handsome villas have been erected outside the town by the prosperous manufacturers. —Pop. urban sanitary dist. (1871) 11,508; (1891) 11,717.

TROW'BRIDGE, WILLIAM PETIT, PH.D., LL.D.: engineer and physicist: b. Oakland co., Mich., 1828, May 25. Having graduated at West Point 1848, he was assigned to the engineer corps, and was appointed assistant in the astronomical observatory of the milit. acad.; then became first assistant to Prof. Bache of the coast survey. He made the surveys of the Appomattox river, Va., 1852, and of the James river near Richmond, and recommended the 'cut-off' which was executed later. He made magnetic and tidal observations on the Pacific coast 1853-56; then resigned his commission in the engineer corps, but became permanent assistant to Prof. Bache on the coast survey. At the opening of the civil war, T. made detailed descriptions of the s. coast for the use of the navy; then he took charge of a branch office of the engineer dept. at New York, and superintended several defensive works in New York harbor. He was prof. of mechanical and dynamic engineering in Yale 1870-77, and then was appointed to a like professorship in Columbia College, New York. To scientific thoroughness he added admirable gifts as an instructor. Besides his official reports on govt. works, he was author of valuable memoirs in scientific periodicals and of a volume on *Steam Generators*. Died 1892, Aug. 12.

TROWEL, n. *trōw'əl* [F. *truelle*; L. *trulla*, a trowel, dimin. of *trua*, a stirring-spoon, a ladle]: a flat, somewhat broad tool used to take up and spread mortar; a similar scoop-shaped tool, used by gardeners. **TROW'ELLED**, a. *-ēld*, formed with a trowel.

TROWS, n. plu. *trōwz*: supernatural beings in Orkney and Shetland similar to **TROLLS** (see **TROLL** 2).

TROWERS: another spelling of **TROUSERS** (q.v.).

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TROY: city, cap. of Rensselaer co., N. Y.; on the Hudson river at head of steamboat navigation, near the Champlain and Erie canals and the mouth of the Mohawk river; and on the New York Central and Hudson river, the Fitchburg, and the Delaware and Hudson Canal Co.'s railroads; 6 m. n. of Albany, 151 m. n. of New York; 5½ sq. m. The greater part of the site of T. was purchased from the Mohegan Indians 1659, and it was laid out as a village under the name of Vanderheyden by people from New England 1787. The name was changed to T. 1789; the first religious organization (First Presb. Chh.) was formed and the first newspaper issued 1791; the first church building was erected 1792, and the village became the seat of the co. buildings 1793; was incorporated 1796, and given a city charter 1816. Much of the city is built on a plain, whence the surface rises to a range of hills on the n. and e., 300–400 ft. above the river—Mt. Ida, on the e., and Mt. Olympus, on the n., being the most conspicuous elevations. Water is obtained from the Piscawen kill in the n., the Poesten kill, about 2 m. s., and the Wynants kill in the s.; and excellent motive power is furnished by the Hudson river, here dammed by the state, by the kills and numerous small dams. The villages of West Troy (q.v.) and Green Island, on the opposite side of the river, are connected with T. by bridges and street railroads, and the villages of Lansingburg and Waterford and the city of Cohoes are connected with it by steam and street railroads. All the street railroads are operated by electricity. T. has long been noted for extent and variety of manufactures. The first Bessemer steel works in America were built here. In 1880 the various manufactures had \$13,418,853 capital, 22,434 hands, and \$26,497,163 in value of products. The chief industries according to value of products were: iron and steel, \$8,702,189; foundry and machine-shop products, \$3,228,848; shirts and collars, \$2,919,591; men's furnishing goods, \$2,636,614; malt liquors, \$895,883; men's clothing, \$685,436; paper, \$546,823; tobacco, cigars, and cigarettes, \$406,661; hosiery and knit goods, \$391,330; and flour and grist mill products, \$367,855.—In 1890 there were 39 manufacturing establishments in the city, including the Troy Steel and Iron Co.'s plant (comprising the former Albany Iron Works, the Bessemer Steel Works, and the Rensselaer Iron Works, and three blast-furnaces on Breaker Island); the Burden Iron Works; 5 stove foundries; collar, cuff, and shirt factories; and manufactories of passenger, freight, and street cars, bells, and other articles. In 1900 there were 662 manufacturing establishments employing \$23,531,622 capital and 21,564 persons, paying \$8,571,923 for wages and \$11,291,740 for materials used, and yielding products valued at \$28,209,259.

In 1902. Jan., the city had \$1,269,602 net debt: \$49,958,227 real property valuation; \$3,955,587 personal; \$1.51 tax-rate on \$100; 6 nat. banks (cap. \$1,390,000), savings and private banks; many daily, weekly, collegiate, and monthly publications. There were 63 churches—viz.: Presb. 15; Meth. Episc. 11; Rom. Cath. 11; Prot.

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Episc. 8; Bapt. 6; Luth. 4; Hebrew 3; Church of Christ 1; Cong., Christ. Sci., Unit., and Univ., each 1. The principal educational institutions were the Troy Female Seminary, Rensselaer Polytechnic Institute (q.v.), St. Joseph's Provincial Seminary (Rom. Cath.), Troy Acad., St. Mary's Commercial Acad., the Troy Commercial College, and 21 public schools. The charitable institutions included the Troy Orphan Asylum, St. Vincent's Female Orphan Asylum, Troy Hospital, St. Mary's Male Orphan Asylum, the Marshall Infirmary, day and church homes of the Presb. and Prot. Episc. Churches, Home for the Aged Poor, and the House of the Good Shepherd. The Troy Y. M. Assoc., the Troy Railroad Y. M. C. A., and the Troy Young Women's Assoc., all are prominent and prosperous societies, with libraries and reading-rooms. Among public and notable buildings are the new City Hall, Griswold's and Rand's opera-houses, Music Hall, Gaiety Theatre, Masonic Hall, Rensselaer Polytechnic Institute, Germania Hall, Young Women's Assoc. building, Troy Savings Bank, Troy Club-house, U. S. govt. building, Polytechnic Alumni Hall, Gardner Earl Memorial Chapel, Gurley Memorial Hall, Troy Orphan Asylum, Union railroad depot, and the Soldiers' and Sailors' Monument on Washington Square. Oakwood Cemetery, one of the most beautiful burial-places in the country, contains the graves of Gen. George H. Thomas, 'the Rock of Chickamauga,' and of Gen. John E. Wool. At the latter is a monument 75 ft. high, said to be the largest stone quarried in 3,000 years.

T. is divided into 13 wards; has a mayor elected for two years and a common council of two members from each ward; obtains water for general purposes from reservoirs on the Piscawen kill, and from the Hudson by means of the water-works plant at Lansingburg; is lighted by gas and electricity, and has a large trade by railroad and water. Commodious steamboats ply daily and nightly on the Hudson between T. and New York, affording a picturesque excursion.—Pop. (1890) 60,956; (1900) 60,651.

TROY: town, cap. of Miami co., O.; on Great Miami river and the Miami canal, and on the Cincinnati Hamilton and Dayton and the Cleveland Cincinnati Chicago and St. Louis railroads; 20 m. n. of Dayton, 68 m. w. of Columbus. The swift current of the river affords excellent power for many manufactories. The town is in an agricultural region, and contains a court-house, municipal building, 10 churches, high and graded public schools, several flour-mills, 2 national banks (cap. \$300,000), and 2 daily and 5 weekly newspapers.—Pop. (1880) 3,803; (1890) 4,494; (1900) 5,881.

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TROY (known also as **ILIUM** or **ILION** or **ILIOS**): ancient city in the n.w. corner of Asia Minor, of great legendary and poetic celebrity. The earliest traditions of the Greek people, in their oldest poetry and history, represent the country on both sides of the *Ægean* as peopled by various races, either of genuine Hellenic or of closely affiliated tribes. Among those who peopled the e. or Asiatic coast are specially named the Pelasgi, the Leleges, the Cæneones, the Carians, the Lycians, and the Trojans. These last, to whom Homer's poem has given a celebrity that throws all the rest into the shade, occupied (conjecturally B.C. 12th c.) the small promontory in the n.w. corner of Asia Minor, best defined, perhaps, as the region of Mt. Ida, with its topographical dependencies. That the Trojans were either a Greek race or some non-Hellenic people under a Greek dynasty seems probable, from the absence in Homer of any such decided national contrast between Greeks and Trojans as we find in mediæval poetry between Christians and Saracens. Local legends represented them as closely connected with Crete; and Homer in the *Iliad*, xx., makes Priam the sixth in descent from Dardanus, first of the dynasty, who was supposed to have come from Crete. The story of the Trojan war, which forms the subject of Homer's great poem the *Iliad*, is very simple. The Trojans, in the person of Paris, or Alexander, son of the reigning monarch, Priam, are represented as having had certain dealings with the Achaëans, or Greeks of the Peloponnesus, in the course of which the gay young prince of T. carries off from the palace of Menelaus, King of Sparta, his spouse Helen, the greatest beauty of her age. To revenge this insult, the Greeks banded themselves together, and sailed against T. with a great fleet. All the Greek tribes afterward famous in history took part in this expedition; but the most notable were the Argives or Achaëans—Greeks of the e. and n. Peloponnesus and adjacent isles; the Spartans—Greeks of the s.e. dist. of the Peloponnesus; the Neleids—Greeks of the w. coast of the Peloponnesus; the Bœotians; and the Thessalians. Of the Thessalians, the most prominent capt. was Achilles; and the general command of the expedition was committed to Agamemnon, King of Mycenæ, as head of the most numerous contingent, and at the same time the brother of the royal personage Menelaus, whose hospitality had been so grossly violated. This well-appointed European army is represented as having spent nine years in besieging the divinely reared walls of Priam's city without making any impression on its strength. A violent quarrel between Achilles and Agamemnon, breaking out in the tenth year, so weakened the invading force that the Trojans, under Hector, pushed the Greeks back to the very verge of the sea, and almost set their ships on fire: this quarrel forms the subject of the *Iliad*. At the critical moment, however, the Thessalian capt. is reconciled to Agamemnon, the head of the expedition; and with his return to the field, the fortune of war changes. Hector, the champion of T., falls, and the impending doom of the city is darkly fore-

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shadowed. The siege and sack of T. were not within the plan of Homer's poem, but are narrated at length in the *Post Homerica*, Greek poem by Quintus Smyrnæus, poet of the decadence. The Greeks possessed a long series of popular poems called the Cyclic poems, in which the whole sequence of the Trojan story was narrated, giving completeness to the brilliant fragment which had been adorned by the genius of Homer. From these poems—of which the abstracts are still preserved—Virgil derived those materials which he has used with such effect in the second and third books of his great poem, the *Æneid* (see *ÆNEAS*). The Cyclic poems, besides the events in the Trojan war after the death of Achilles, contained an account of the various colonies in Italy and elsewhere believed to have been founded by the scattered chiefs of the expedition after their return home. Of these, the settlements of Diomedes, Philoctetes, and Idomeneus, on the s.e. coast of Italy, and that of Æneas, on the banks of the Tiber (Rome), are the most famous. The chronology of the Trojan war, depending mainly on artificial construction from genealogical data, is not trustworthy; but there are good reasons for believing that the generally received date of the burning of T., B.C. 1184, is not far wide of the mark: some authorities advocate the date B.C. 1127. After the fall of the kingdom of Priam, the story of T. is short and uneventful. Under the Lydian kings, whose dynasty culminated in Cræsus, a New T.—*Ilîum Novum*—began to creep into notice, which, from the glory that belonged to its name, and the favor of Alexander the Great, Julius Cæsar, and other influential visitors, grew into some significance. The interest which attached to it, however, in its most flourishing estate, was more antiquarian than political.

How far the events of the Trojan war, as found in Homer and the Cyclic poets, are historical, depends on the view taken of the general character of the materials of popular ballad-poetry in all countries. That there is in the general case an under-stratum of historical reality, out of which the earliest popular poetry grows, may be assumed as certain. But equally certain is the strong tendency, in early uncritical ages, to erect on this foundation a purely imaginary superstructure. At the same time, there is a very great difference observable in the popular poetry of different nations as to the greater or less amount of trustworthy historical matter which lies imbedded in the imaginative conglomerate. The excess of the imaginative, fanciful, and altogether improbable element is found in the English Arthurian and French Carolingian romances. In Homer, on the other hand, there is a sobriety of tone, a geographical clearness, and a general air of verisimilitude, which incline the reader to accept the historical reality of the main facts. In the first chapter of Herodotus, we find the Phœnicians practicing the very same act of abduction, though in a more violent form, which the poet represents as having kindled the famous ten years' warfare between Greece and T.; and even in the most general view, the

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war of T. between rival peoples on the opposite sides of the Ægean may be deemed the natural overture of those great struggles by which, on the same theatre afterward, the fate of the world, indicated by the preponderance of the European over the Asiatic element, was more than once decided.

The PLAIN OF TROY is formed by the débris of the great chain of mountains which terminates the peninsula of Asia Minor on the n.w., where it is separated from Europe by the Sea of Marmora and the narrow strait of the Dardanelles. This chain of mountains is called Ida by Homer [*ide*, wood]; and its highest peak toward the s. side of the Troad, overhanging the Bay of Adramyttium, is celebrated by the same poet as Gargarus: West from this chain, the land slopes gradually down by a series of undulating ridges to the s. coast of the Dardanelles; and the plain included between these ridges and the sea is the plain of Troy. It is surrounded on all sides by elevated ground, by hills and mountains toward the e. and s.e., and by rocky ridges or cliffs along the coast. At one place only does it open to the sea, and this is at the extreme n.w. corner, where it meets the s. end of the Dardanelles: here is a stretch of sandy shore about two m. in length, beginning behind the Turkish fort of Koumkale, and trending eastward. This is the only place where a fleet such as that described in the *Iliad* could effect a permanent landing; and here, accordingly, by general consent, the encampment of the Greeks is placed. The eastward promontory which bounds this bay is universally acknowledged as the Rhætean promontory of the ancients, while that on the w. is the Sigean. Here, also, as the natural mouth of the plain, the principal river, by whose action mainly it was formed, finds its way into the sea. This river is the Menderes, obviously a corruption of the Homeric Scamander, called also by the poet Xanthus, from *xanthos*, i.e., the *yellow* river, from the color of its waters—a quality noticed by most modern travellers. Looking up the plain from any of the heights about the mouth of the river s.e. toward Gargarus, one can easily trace its course about nine m., where it emerges into the plain through a defile in the mountains: nine m. is thus the extreme length of the plain of Troy. Its breadth is about three m. It presents the appearance of ‘a long tract of meadow-land, inclosed within a girdle of low, round-backed hills, and prettily garnished by many lines of trees, which skirt the water-courses.’ These waters, except the Scamander, are not large enough to be termed rivers, but are mere mountain torrents or brooks, generally dry in summer, some of them merely a sort of natural drains or ditches. Those worthy of note are three: the first flowing from the chain of Ida w. into the plain, about three m. from the sea, called the *Dombrek*; a second in the same direction, about five m. further up, called the *Kimair*: the third streamlet rises at the head of the plain, near the Turkish village of Bunarbashi, and, creeping along the bottom of the slope toward the Archipelago, forms the boundary of the plain on the

TROY.

w., and empties into the Mendereh, about two m. above its mouth. One of these three streams must be the Homeric Simois.

The topography of a plain so famous in the history or the legend of human civilization has occupied the attention of the learned in ancient and modern times; and a considerable library could be formed of volumes in which this region has been described, and its most famous localities discussed. The topographical result of these voluminous discussions can, however, now be given in a few sentences. In the first place, after 70 years of confusion and hallucination, it may be regarded as established, that the Mendereh is the Scamander. It is also universally allowed that *Novum Ilium*, or New Troy, occupied the site of Hissarlik, on an eminence about four m. from the mouth of the river, on its right bank, near the bend of the Dombrek. Among the many works on this question, notable are those of Le Chevalier (1790), Ulrichs, Welcker, and Maclaren; but all speculations and researches sink into insignificance compared with those of Dr. Heinrich Schliemann (q.v.). This great archæological explorer (1870) began at his own cost, on the hill of Hissarlik, those excavations continued, with some interruptions, about 12 years, whose results have given him lasting fame. His excavations at Mycenæ 1876 also had much success; but the Trojan explorations have been of much greater importance, and have been given to the world in three several works in German and English—*Trojan Antiquities* (1875); *Ilios* (1880); and *Troja: Results of Latest Researches and Discoveries on the Site of the Homeric Troy* (1883).

Troy (called also Ilion, Ilios), at the foot of Mt. Ida, was circled with strong walls, and defended by a citadel, Pergamos, in which were numerous temples, chief among them the temple of Pallas. The site of this early T. was determined by Le Chevalier (1786) to be on the rocky eminence Bunarbashi, and to certain tumuli at this spot he gave the names 'Priam's grave,' 'Hector's grave,' etc. Schliemann, however, considered the remains of walls on Bunarbashi to belong mostly to a later period, the Hellenic. Farther down in its course the Mendereh (Scamander) bends w.n.w., and there the ancient bed of the Scamander stretches further northward, parallel to the present course of the river. On the e. bank of this ancient bed of the Scamander is an eminence extending n. to the valley of the Dombrek-Tshai (prob. anc. Simois): this is Hissarlik, a hill rising about 112 ft. above the plain. On this height, toward the end of B.C. 6th c., a new and Æolic Ilion arose, which attained some importance in Roman times: on the site are remains of a temple of Athene and of a fortress. Here Schliemann (q.v.) made his explorations, 1870-82, and found reasons for concluding that at Hissarlik are the ruins of 7 different successive 'cities' (more properly citadels) superimposed one upon another. Deeper beneath the vast mass of rubbish and ruins are traces of a small town on the hill, of absolutely unknown date. The next above it is greatly larger, the hill having simply

been its citadel, and shows traces of grandeur. This city, also prehistoric, seems to have been overthrown by some great catastrophe about B.C. 12th c., certainly not later than B.C. 10th c.; and it is this that Dr. Schliemann ultimately (in his third volume, *Troja*) came to regard as identical with the Troy of Priam and of Homer's poetry. The last and highest of the series is the fifth historic one, the *Novum Ilium* above mentioned, which disappeared from history about the 4th or 5th c. after Christ. Schliemann uncovered several of the gates of the city (supposed Troy), the s. and w. wall, and two small buildings which he took to be remains of Priam's royal palace. Of most interest is the 'treasury' which he discovered near the s.w. gate. It contained copper utensils, beakers, cups, personal ornaments (chains, bracelets, diadems, rings) of gold and silver, which indicate a stage of culture answering to the period about B.C. 2000. These treasures are mostly deposited in the Berlin Museum of Ethnology. He exhumed also enormous quantities of prehistoric and other pottery, besides numerous weapons of bronze and stone. But Schliemann's identification of the second city at Hisarlik is not accepted by German scholars, and has not passed unscathed through the more recent criticism of scholars in general. Prof. R. C. Jebb, with the leading German archæologists, adduces strong reasons for believing that the 'lofty,' 'windy,' 'beetling' citadel of Homer's Troy can be assigned to no other site than to the hill of Bali-dagh, rising 400 ft. above the village of Bunarbashi.—See the several works of Schliemann, *Troja*, *Ilios*, etc. (above noted); Brentano's *Zur Lösung der troianischen Frage*; R. C. Jebb's *Schliemann's Ilios* (*Edinb. Rev.*, CCCIV.); W. J. Stillman's *Découvertes de Schliemann* (*L'Homme*, 1884, Oct.).

TROY, n. *troy*, or TROY-WEIGHT [said to be from *Troyes*, in France—a weight used at the fair of *Troyes*]: a standard of weight taking its name from the fair of *Troyes* (q.v.), town of France, and an important centre of commerce in the middle ages, where a similar weight was in use. A T. pound (of what value is unknown) is mentioned in Britain first in 1414, long before which time the standard pound of 12 oz., as well as another pound (the Tower pound) of 12 oz., was in use. The term 'Troy' was applied to the standard pound first in 1495, but no change seems to have been then made in its value; and it continued to be used exclusively by dealers in the precious metals, gems, and drugs: see POUND. The T. pound contains 12 oz., each ounce 20 pennyweights, and each pennyweight 24 grains (the grain being identical with the avoirdupois grain); thus the pound contains 5,760 grains, and is to the avoirdupois pound (which contains 7,000 grains) as 144 to 175; while the T. ounce is to the avoirdupois ounce (which contains 437½ grains) as 192 to 175. For medicines, other subdivisions of the T. pound were formerly employed; but now medicines are weighed by the Avoirdupois (q.v.) standard. T.-weight is now used chiefly by goldsmiths and jewellers.

TROYES—TRUCE.

TROYES, *tréd*: town of France, formerly cap. of the province of Champagne, and now of the dept. of Aube; on the left bank of the Seine, 104 m. e.s.e. of Paris by railway. It is a very old-fashioned place, and most of the houses are of wood: some, of stone, dating from the 16th c., are of notably original and beautiful architecture. The principal buildings are the cathedral, dedicated to St. Peter, a splendid specimen of *flamboyant* Gothic, founded 872, and rebuilt between the 13th and 16th c.; the churches of St. Urban, the Madeleine, St. Pantaleon, and St. Remi, the Hôtel de Ville, a public library containing 100,000 vols. and 5,000 MSS., a museum, the Palace of Justice, the Exchange, Merchants' Hall, and various educational institutions. T. is not so populous or important as it was in the middle ages: even as late as Henry IV.'s time, its pop. was more than 60,000. It has extensive cotton and woolen manufactures; and, as the centre of a rich agricultural region, it has a large transit-trade. Cotton and woolen hosiery, woven mostly by hand, is very largely exported.—Pop. (1891) 50,330; (1901) 53,146.

T., anc. cap. of the Celtic Tricassii, was called by the Romans *Augustobona*; later, *Civitas Tricassium*; and then *Treca* (corruption of Tricassii), whence the modern T. Under the Counts of Champagne it rose in the 12th c. to great importance. Here the treaty uniting the French and English crowns was concluded 1420, May 21, between Henry V. of England, Charles VI. of France, and the Burgundian party. It was sealed soon afterward by Henry's marriage with Princess Catherine.

TROYON, *trwá yōng'*, CONSTANT: 1810, Aug. 25—1865, Feb. 21; b. Sèvres, France: painter. He spent his youth in the national porcelain-works; studied painting; began exhibiting 1833; and became eminent as a painter of landscapes and animals. His most noted works were landscapes of Sèvres, St. Cloud, and suburban Paris, and, among animal and figure pieces, *The Cattle Market*, *The Watering Place*, *Working Oxen*, *Hounds at Rest and in Motion*, *Before the Storm*, *Osier Bed*, *White Cow chased by a Dog*, and *Pastures near Trouville*.

TRUANT, a. *trō'ánt* [Bret. *truant*, a vagabond: Sp. *truhan*, a buffoon: F. *truand*, a vagrant: Cornish. *tru*, alas! W. *truan*, poor, miserable: Gael. *truagh*, wretched]: idle; lazy; wandering from business or duty; loitering: N. an idler; a scholar absent from school without permission; a loiterer: V. to idle at a distance from duty; to absent one's self from school without permission. **TRU'ANTING**, imp. **TRU'ANTED**, pp. **TRUANCY**, n. *trō'án-sĩ*, the act of playing truant; the state of being a truant. To **PLAY TRUANT**, to be absent from school without leave.

TRUCE, n. *trós* [It. *tregua*; F. *trêve*, formerly in the plu. *trêves*, a truce: Icel. *tryggr*, secure, trusty: Goth. *tryggva*, a covenant: comp. Gael. *truas*, pity (see **TRUE**)]: a temporary peace or suspension of hostilities agreed upon by contending forces or states, during which it is dishonorable to occupy more advanced ground, or to resort to any

TRUCK—TRUCKLE.

act which would confer advantage; but which may lawfully be broken before the prescribed period, on notice previously agreed on being given to the opposite party; this is called *denouncing a truce*; cessation; short quiet. **TRUCE'-LESS**, a. -*lēs*, without truce; merciless. **TRUCE-BREAKER**, one who violates an agreement or engagement. **TRUCE OF GOD**, in the *Middle Ages*, cessation of warfare and feuds on certain days fixed by the church (see **GOD'S TRUCE**). **FLAG OF TRUCE**: see under **FLAG** 1.

TRUCK, v. *trūk* [F. *troquer*; Sp. and Port. *trocár*, to swap, to barter: F. *troc*; Scot. *trock*, exchange, barter: F. *truc*, a blow, a smack with the lips]: to exchange; to barter or give in exchange: N. traffic by exchange of goods; hence, commodities exchanged in such traffic. **TRUCK'ING**, imp. **TRUCKED**, pp. *trūkt*. **TRUCKAGE**, n. *trūk'āj*, the practice of bartering goods. **TRUCK'ER**, n. -*ér*, one who trucks. **TRUCK SYSTEM**, the system formerly pursued in the United Kingdom and elsewhere by the owners of factories, and other large works, and by coal-masters, of compelling their work-people to take goods in exchange for their labor—a system put down in Great Britain by act of parliament 1831, though still covertly followed in many places. This thoroughly unjust and demoralizing system (or a system involving the same principle under some thin disguise), though never extensive in the United States, has been pursued by some large mining companies, and is still in use in a few districts; but is contrary to the laws in most of the states. In regions remote from a settled population, great companies (mining, etc.) may find a temporary necessity for keeping in store certain articles for sustenance of their workmen who may wish to buy from them; but this plan should be—(1) pursued no longer than is necessary; (2) administered on no scheme of profit to a powerful company from the necessities of helpless men.

TRUCK, n. *trūk* [L. *trochus*; Gr. *trochos*, a hoop—from *trechein*, to run]: a small wooden wheel; a sort of platform running upon wheels or trucks; a small solid wheel for ordnance; a cylinder; the round disk at the top of a mast; a small hand-carriage with two very small wheels near one end for the removal of sacks, etc.; an open railway wagon for the conveyance of goods; a group of two or more pairs of wheels in one frame, used for supporting one end of a railway-car, a locomotive, or the like; a bogie; a kind of dray: V. in *rail.*, to convey by truck. **TRUCK'AGE**, n. -*āj*, the cost of transporting or moving goods by trucks.

TRUCKLE, n. *trūk'l* [dim. from **TRUCK** 2]: a small wheel or caster; a truckle-bed: V. to roll or cause to roll; to roll on a wheel or something round; to lie or pass under something else; hence, to yield or bend obsequiously to the will of another; to submit servilely. **TRUCK'LING**, imp. -*ling*: Adj. meanly obedient; cringing; servile: N. servile submission to the will of another. **TRUCKLE-BED**, a bed that can be rolled in under another and drawn out when wanted for use, also called *trundle-bed*.

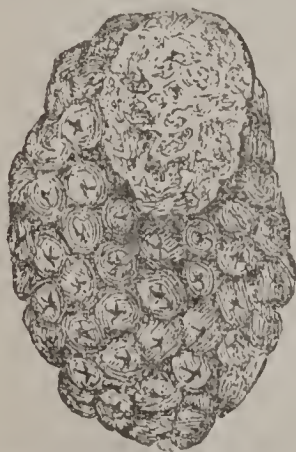
TRUCULENT—TRUFFLE.

TRUCULENT, a. *tró'kū-lěnt* or *trăk'ū-lěnt* [L. *truculentus*, very savage, fierce—from *trux* or *trucem*, fierce: It. *truculento*]: savage; of fierce aspect; destructive; cruel. **TRUCULENCE**, n. *-lěns*, or **TRUCULENCY**, n. *-lěn-sĭ*, savageness of manners; ferociousness of aspect. **TRUCULENTLY**, ad. *-lĭ*.

TRUDGE, v. *trŭj* [Gael. *troidh*, the foot, the sole of the foot: W. *troed*, a foot: a variant of **TREAD**: comp. It. *truccare*, to trudge, to scud, to pack away nimbly]: to go steadily along; to jog or march heavily on; to travel or walk with labor and effort. **TRUDG'ING**, imp. **TRUDGED**, pp. *trŭjd*.

TRUE, a. *tró* [Icel. *trur*, sure, trusty: Dan. *tro*, true: Goth. *trauan*; Ger. *trauen*, to believe, to confide in]: in accordance with that which actually exists, or is done or said; conformable to fact or the actual state of things; not false or counterfeit; not perfidious; not fraudulent; conformable to rule; genuine; faithful; honest; right, free from falsehood. **TRUE'NESS**, n. *-nēs*, sincerity; faithfulness; truth; exactness; accuracy. **TRULY**, ad. *trŭlĭ*, in reality; according to truth. **TRU'ISM**, n. *-izm*, that which is self-evident: something trite. **TRUE BILL**, the formula by which the grand jury finds or approves a bill of indictment. **TRUE-BLUE**, a. inflexibly honest or faithful. **TRUE-BORN**, a. of genuine birth. **TRUE-BRED**, a. of a genuine or right breed. **TRUE-HEARTED**, a. sincere; not faithless or deceitful. **TRUE-HEARTEDNESS**, n. state of being sincere and faithful, honesty; sincerity. **TRUE-LOVE**, n. one really beloved. **TRUE-LOVER'S-KNOT**, or **TRUE-LOVE-KNOT**, n. a line or band knotted with many folds, a supposed emblem of the interwoven affections. **TRUE-PENNY**, n. in *OE.*, an honest fellow.—**SYN.** of 'true': real; genuine; veracious; steady; honest; constant; loyal; exact; rightful; actual; positive; veritable; certain.

TRUFFLE, n. *trŭf'fl* [OF. *trufle*; F. *truffe*; Sp. *trufa*; It. *tartufo*, a truffle—from L. *tuber*, a swelling, a truffle:



Truffle (*Tuber cibarium*).

OF. *trufle* means also mockery, railery, from which sense of the word comes Eng. *trifle*: fleshy fungus of the genus *Tuber* and section *Gasteromycetes*, of roundish shape, found buried at the depth of several inches in the clayey sandy soils of s. England, in France, in Italy, etc.—much esteemed as a luxury. **TRUFFLED**, a. *trŭf'fld*, cooked or stuffed with truffles.—The Common *Truffle* (*T. cibarium*) is of black color and has a warty surface. It varies in size from that of a large plum to that of a large potato. On account of its agreeable flavor, it is used in preparation of

many dishes. It is common in central and s. Europe, chiefly in loose soils, in woods and pastures, as in the chestnut woods of France and Italy. In England it occurs in the downs of Wiltshire, Hampshire, and Kent. Other

TRUISM—TRUMBULL.

species, as *T. aestivum*, *T. rufum*, and *T. moschatum*, are found in parts of France, Italy, and other countries of Europe, and are sought after and used in the same manner as the Common Truffle. The Eng. species are more numerous and abundant than was formerly supposed. France has 3 varieties, and the annual production is valued at about \$3,000,000. Dogs and pigs are trained to seek truffles, and readily discover by the scent the spot where they grow underground. The stirring of the soil in the gathering of truffles seems to increase its productiveness. In Germany the name BLACK T. is given to the Common T.; and that of WHITE T. to *Rhizophagon album*, species of a nearly allied genus, found also in England: it grows half above-ground, is of whitish-red color, and generally of the size of a large walnut. It is less aromatic than the Common T., but is used in the same way. Much attention has been given recently to gathering and preserving the T. in the United States, especially in California.

TRUISM, n.: see under TRUE.

TRUJIL'LO: see TRUXILLO.

T-RULE: see T-SQUARE.

TRULL, n. *trül* [Ger. *trolle*, a coarse sluttish woman: Swiss, *trolle*; Swab. *trull*, a thick fat woman: Scot. *troll*, to work or walk in a slovenly manner]: a sorry wench; a vile strumpet; a vagrant strumpet.

TRULLAN, *trül'an*: an epithet sometimes applied to the ecclesiastical council, which is otherwise called the Quinisext (q v.), from *Trullus* [Gr. *troullos*], the hall of the palace at Constantinople in which the Fathers assembled.

TRULLIZATION, n. *trül'li-zä'shün* [L. *trullissārē*, to trowel, to plaster—from *trulla*, a trowel (see TROWEL)]: the laying of layers of plaster with a trowel.

TRULY, ad.: see under TRUE.

TRUMBULL, *trüm'bül*, BENJAMIN, D.D.: Congregational minister and author: 1735, Dec. 19—1820, Feb. 2; b. Hebron, Conn. He graduated at Yale 1759, and then was pastor of a chh. at New Haven 1760 till his death. In the revolutionary war he was chaplain and volunteer soldier. He wrote: *Vindication of the Conn. Title to the Contested (western) Lands*; *Complete Hist. of Conn.*; and Vol. I. of a *Gen. Hist. of the United States*.

TRUM'BULL, HENRY CLAY, D.D.: Congregational minister and author: b. Stonington, Conn., 1830, June 8. He was educated at Williston Sem., Easthampton, Mass.; was ordained to the ministry 1861, and was chaplain of a Conn. regt. during the civil war. He was missionary sec. for New England of the Amer. S. S. Union 1865-71, then gen. sec. till 1875, when he became ed. of the *Sunday School Times* in Philadelphia. Visiting Palestine 1881, he discovered the site of Kadesh Barnea, and published the results of his researches in a vol. 1884. He is author of several other books.

TRUMBULL.

TRUMBULL, JAMES HAMMOND, LL.D.: philologist and historian: b. Stonington, Conn., 1821, Dec. 20. Having studied at Yale, he assisted the Rev. J. H. Linsley in cataloguing mammalia, reptiles, fishes, and shells of Conn., 1842-3; was asst. sec. of state of Conn. 1847-52, and sec. of state 1861-65. He is learned in the aboriginal languages of N. America, and has published several vols. on the subject. Besides his philological writings, which are an authority on their special subject, he is author of works on the *Colonial Records of Conn.*; *Origin of McFingal*; *Constitutions of Connecticut*.

TRUMBULL, JOHN: painter: 1756, June 6—1843, Nov. 10; son of Gov. Jonathan T. ('Brother Jonathan') of Conn., and bro. of Gen. Jonathan T., aide-de-camp to Gen. Washington; b. Lebanon, Conn. He was educated at Harvard, and applied himself to painting. He had completed two pictures, the *Battle of Cannæ* and the *Judgment of Brutus*, at 19, when the war of the revolution broke out, and he joined the provincial army before Boston as adjutant of the 1st Conn. regt. The execution of drawings of the British works procured his appointment as aide to Washington, and soon afterward that of brigademajor. In 1776-7 he served under Gates and Arnold as adjt. gen.; but, offended with the action of congress respecting the date of his commission, he resigned, and resumed the palette. In 1780 T. went to London *viâ* France, where he was making rapid progress under the instructions of Sir Benjamin West, when, during the excitement occasioned by the execution of Major André, he was thrown into prison. The king, George III., promised West that his life should be spared; but he was kept eight months in prison, and then released on condition of leaving the kingdom. After the war he returned, and resumed his studies. His *Priam receiving the Body of Hector*, painted at this period, is in the gallery of the Boston Athenæum. In 1786 he produced the first of a series of modern historical and military works, the *Battle of Bunker Hill*, followed by the *Death of Montgomery*, and *Sortie of the Garrison from Gibraltar*, exhibited in London 1789, and engraved by Sharp. In 1789 he returned to the United States, painted several portraits of Washington, and secured likenesses of many prominent actors in the revolution; and 1796 returned to England as sec. of legation to John Jay. He was in England 1808-15, painting industriously. Returning to America, he was employed by congress to paint four large national pictures for the rotunda of the capitol at Washington—the *Declaration of Independence*, *Surrender of Burgoyne*, *Surrender of Cornwallis* and the *Resignation of General Washington, at Annapolis, December 23, 1783*. These pictures are valuable chiefly as collections of portraits. He afterward completed a gallery of all his historical pictures, 57 in number, on a smaller scale, which became the property of Yale Univ., and has great historical value. He was pres. of the Amer. Acad. of Fine Arts from its foundation 1816 until the formation of the National Acad. 1825; and died in New York.

TRUMBULL—TRUMP.

TRUMBULL, JOHN, LL.D.: author, and one of the Amer. poets of the 18th c.: 1750, Apr. 24—1831, May 10; b. Westbury (now Watertown), Conn. He graduated at Yale 1767; wrote some essays in the style of Addison's *Spectator* (1769); *Progress of Dullness*, a satire on educational methods (1772); studied law, and began practice in New Haven 1774. The first canto of his *McFingal*, a satire in the Hudibrastic vein, was pub. 1775, and the 4th and last 1782 (the whole repub. New York 1881). He wrote several political essays, and was a member of the Conn. legislature 1792 and 1800, judge of the Conn. superior court 1808-19. He settled in Detroit, Mich., 1825.

TRUMBULL, JONATHAN: governor of Conn.: 1740, Mar. 26—1809, Aug. 7; b. Lebanon, Conn.; son of JONATHAN T. He graduated at Harvard 1759; was member of the legislature and speaker; paymaster in the army 1775-78; then sec. and aide to Gen. Washington till the end of the war; member of congress 1789-95 (speaker 1791-95); U. S. senator 1795-6; lieut. gov. of Conn. 1796-98; then gov. till his death.

TRUMBULL, JONATHAN, LL.D.: governor of Conn.. 1710, June 10—1785, Aug. 17; b. Lebanon, Conn. He graduated at Harvard 1727; after studying theol. was licensed to preach; but turned to mercantile business and then to the law. He was elected to the legislature 1733; was speaker of the assembly 1739; then held judicial office for some years; was chosen lieut. gov. 1766, gov. 1769, holding office till 1783. He was a fast friend of George Washington, who greatly valued his counsel and used to refer to the gov. of Conn. as 'Brother Jonathan'—hence, probably, the popular epithet for the U. S. govt. and people. When Washington, 1776, Aug., wrote to T. of the urgent need of reinforcements for the army, T. issued a call to the people of Conn. which had almost instant response in the forming of 9 regts. of 350 men each, though already 5 regts. from Conn. were in the field. In the call to arms was this characteristic sentence: 'Join yourselves to one of the companies now ordered to New York, or form yourselves into distinct companies and choose captains forthwith. March on; this shall be your warrant. May the God of the armies of Israel be your leader.' See *Life* by Isaac W. Stuart.

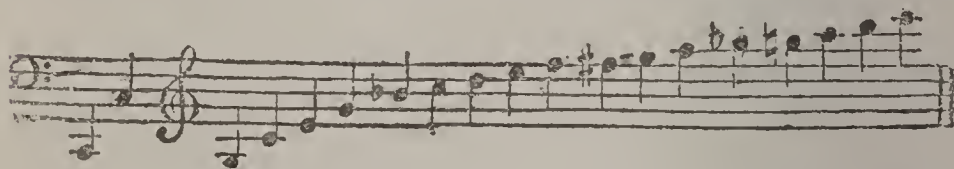
TRUMP, v. trümp [It. *trombare*, to make a rattling noise: *strombare*, to blurt with one's mouth: F. *tromper—lit.*, to blow the trumpet to one, hence, to deceive (see TRUMPET)]: in *OE.*, to lie, to boast; to deceive; to impose upon; to play a trick upon. **TRUMPING, imp. TRUMPED, pp. trümp't.** **TRUMPERY, n. trümp'ér-î,** something of less value than it seems; falsehood; trifles; empty talk; things of no value: **ADJ.** trifling; worthless; not able to bear investigation. To **TRUMP UP**, as a story, to get up a fraudulent story; to devise; to seek and collect apparent evidence unscrupulously, from every quarter.

TRUMP, n. trümp: in *Scrip.* and *poetry*, a trumpet.

TRUMP—TRUMPET.

TRUMP, n. *trǔmp* [F. *triomphe*; Ger. *trumpf*, *trump*: same word as *triumph*, from L. *triumphus*, a triumph]: the suit of cards in a game any one of which for the time being outranks and takes any card of the other suits; the winning card; an old game at cards; in *slang*, a good fellow upon whom one can always depend to do the right thing on an emergency: V. to play a winning card on another in order to win; to take with a winning card. TRUMP'ING, imp. TRUMPED, pp. *trǔmpt*.

TRUMPET, n. trum'pět [F. *trompe* or *trompette*; Sp. and Port. *trompa*; It. *tromba*, a trumpet: OHG. *trumba*, a drum: L. *tuba*, a trumpet with a straight tube]: a wind instr. of great antiquity, in its present form consisting of a tube of considerable length, doubled up in the form of a parabola, and terminating in a bell-like aperture: V. to publish by sound of trumpet; to proclaim. TRUM'PETING, imp. TRUM'PETED, pp. TRUM'PETER, n. -ēr, one who or that which trumpets; a soldier who blows a trumpet; to give a signal or pass an order; one who proclaims or publishes; a kind of pigeon. TRUM'PETRY, n. -rī, the sound or blowing of trumpets. TRUMPET-CALL, a military order sounded through a trumpet. TRUMPET-FISH, a fish so called from its tubular muzzle. TRUMPET-FLOWER, a name applied to more than one species of plants of the ord. *Bignoniaceæ*, whose flowers are trumpet-shaped; a species of honeysuckle. TRUMPET-SHELL, a univalvular shell of a trumpet-shape. TRUMPET-TONGUED, a. having a tongue loud and piercing as a trumpet. SPEAKING-TRUMPET, a trumpet for increasing the intensity of speech, and transmitting it to a considerable distance. HEARING or EAR TRUMPET, a long tube, generally made curved or spiral, with a trumpet-shaped end, for collecting sounds into a focus, used by persons with imperfect hearing, to enable them to hear words and sounds more distinctly.—The *Trumpet* produces the following progression of sounds:



Music for the T., as for the Horn (q.v.), is written in the key of C, the key to which the instrument is to be adapted being pointed out by the composer. The pitch is an octave higher than that of the horn. Trumpets in the keys of C, D, and E♭ are most used; but there are trumpets also in A, B♭, E, F, and G. To enable the T. to give a complete series of semitones, finger-keys and sliding tubes have been introduced by some makers, rather to the detriment of the freshness and fulness of tone of the instrument.

TRUMPET-FISH—TRUNCHEON.

TRUMPET-FISH, or **SNIPE'-FISH**, or **BEL'LOWS FISH**: fish of the genus *Centriscus*, family *Centriscidae*, remarkable for the elongated and tubular snout, at the end of which the mouth is situated; and for a very long spine in front of the dorsal fin. The species (*C. scolopax*), rare on Brit. coasts, abundant in the Mediterranean, attains a length of about five inches, the snout projecting about an inch and a half in front of the eyes. The mouth is destitute of teeth. This little fish is esteemed a delicacy, and is often seen in the markets of Italy.—On the N. Amer. Atlantic coast the name T.-F. is given to *Fistularia tabacaria*, of family *Fistulariidae*—a fish similar in appearance, but having a tail with two long filaments. Another name is Pipe-fish.

TRUMPET-FLOWER: popular name of flowering shrubs of genera *Bignonia* and *Tecoma*, both of the nat. order *Bignoniaceæ* (q.v.). *Bignonia capreolata* is native of the s. states, but often planted in shrubberies and gardens in the middle states. It is a climbing shrub with conjugate leaves and heart-shaped oblong leaflets. The flowers are reddish yellow, with long tubular corolla, from whose form the Eng. name is derived.—*Tecoma radicans* (formerly *Bignonia radicans*) is a woody vine, native of the s. states, reaching to a more n. latitude than the last. It has much larger flowers, of yellowish-scarlet color. The leaves are pinnate, leaflets ovate and toothed.—*T. grandiflora* is a native of Japan, with pinnate leaves and flowers much larger than *T. radicans*.

TRUNCATE, a. *trǔng'kūt* [L. *truncātus*, pp. of *truncāre*, to maim, to cut off—from *truncus*, a trunk: It. *troncare*; F. *tronquer*, to lop off]: terminating abruptly as if cut off at the end: V. to cut off; to lop; to maim. **TRUN'CATING**, imp. **TRUN'CATED**, pp. a. cut short; in *geom.*, applied to a pyramid or cone, the top or vertex of which is cut off by a plane parallel to its base. **TRUNCATION**, n. *trǔng-kū'shūn*, state of being truncated; the change in the geometrical form of a crystal, produced by the cutting off of an angle or edge so as to leave a face more or less large instead of the edge or angle. **TRUNCUS**, n. *trǔng'kūs*, in *bot.*, the trunk or bole of a tree.

TRUNCHEON, n. *trǔn'shūn* [F. *tronçon*, a piece cut or broken off, as from a lance or sword—from L. *truncus*, stock or trunk of a tree]: a short staff; a cudgel; a baton; a military staff of command: V. to beat with a cudgel. **TRUN'CHEONING**, imp. **TRUN'CHEONED**, pp. *-shūnd*: ADJ. furnished with a truncheon. **TRUN'CHEONEER**, n. *-shūn-ēr'*, or **TRUN'CHEONER**, n. *-shūn-ēr*, a person armed with a truncheon.

TRUNDLE—TRURO.

TRUNDLE, v. *trūn'dl* [AS. *trendel*, an orb, a circle; Fris. *trund*, round; Sw. and Dan. *trind*, round: from same root as *trend*]: to roll along; to roll, as on little wheels; to roll along, as a hoop: N. a round rolling body; a little wheel; a low cart with small wooden wheels—now called a *truck*. **TRUN'DLING**, imp. *-dling*. **TRUNDLED**, pp. *trūn'dld*. **TRUNDLE-BED**, same as **TRUCKLE-BED**, which see under **TRUCKLE**. **TRUNDLE-HEAD**, the wheel that turns a millstone. **TRUNDLE-TAIL**, a round tail of a dog; a dog having such a tail.

TRUNK, n. *trūngk* [F. *tronc*, a trunk, headless body, alms-box—from L. *truncus*, the stock or body of a tree without the boughs; Ger. *strunk*, a stump, a trunk]: the stem or body of a tree apart from its branches; the main body of anything; a box or chest, particularly one covered with leather, skin, or the like; the proboscis of an elephant; the part of the body between the head and the abdomen; a large pipe through the cylinder of a steam-engine; a water-course made of planks. **TRUNKS**, n. plu. *trūngkz*, trunk-hose. **TRUNKED**, a. *trūngkt*, having a trunk. **TRUNK-HOSE**, that part of hose which covered the trunk or body; hence a garment covering the body from the waist to the middle of the thigh, and shaped like a bag through which the legs are thrust. **TRUNK-LINE**, the main line of a railway, as distinguished from the branch lines or feeders. **ELEPHANT'S TRUNK**, the proboscis of the elephant, perhaps a corruption of *trump*, in allusion to its long trumpet-like form.

TRUNK'-FISH: see **OSTRACION—OSTRACIONIDÆ**.

TRUNNION, n. *trūn'yūn* [F. *trognon*, the stalk of a cabbage; It. *troncone*, the trunk or body of a tree—from L. *truncus*, a trunk]: one of the two knobs which project from the opposite sides of a cannon, and which serve to support it on the cheeks of the carriage (see **GUN**).

TRURO, *trū'rō*: town, county seat of Colchester co., Nova Scotia; near the head of Cobequid Bay; on the Intercolonial railroad, at its junction with the Pictou branch; 61 m. n.n.e. of Halifax. Besides several handsome churches, its public buildings are the court-house, a provincial normal school, and the model school buildings. T. manufactures engines, machinery, iron-castings, woolens, leather, wooden-ware, boots and shoes, hats, lasts, and pegs. Mining, ship-building, and fishing are carried on in its vicinity.—Pop. (1881) 3,461; (1891) 5,102; (1901) 5,993.

TRURO: city, municipal borough, and seaport of Cornwall, England, of which county it is considered the metropolis, though Bodmin (q.v.) is the county town; about 10 m. n.n.e. of Falmouth, 300 m. by railway s.w. of London; at the junction of the Allen and the Kenwyn, here met by an inlet of the sea called T. river, whose banks present some beautiful scenery, and which admits vessels of 70 tons to the quays of the town. T. is one of the oldest towns in England. It is the centre of a mining district, and largely exports tin and copper ore. St. Mary's Church, an interesting Perpendicular Gothic edifice of the

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16th c., has in part been incorporated with the new Cathedral of St. Mary (1880), which forms one of the most important of modern Eng. ecclesiastical buildings. The bishopric of T. was constituted 1876.—Pop. (1891) 11,131.

TRUSS, n. *trūs* [F. *trousser*, to pluck up; *trousse*, a truss, a bundle: OF. *trosser*, *torser*, to pack up—from a supposed mid. L. *tortiūrē*, to twist together—from L. *tortus*, pp. of *torquēre*, to twist: O.Sp. *trossa*; Sp. *torca*, a truss of hay: W. *torchē*, to twist, to wreath]: a quantity, about 56 lbs., as of hay or straw, tied together; a small hand-packed bundle of dry-goods: in *building*, a combination of timbers or of iron parts, or both, so arranged and fastened together as to form a stiff unyielding frame; in *surg.*, a bandage or apparatus used in cases of hernia to keep up the reduced parts, and to prevent further protrusion (see below): among *seamen*, the rope used to keep the centre of a yard to the mast, now replaced by a heavy iron fitting; in *arch.* (see CONSOLE): V. to bind or pack close; to skewer, as poultry, etc.; to make fast; to hang. TRUS'SING, imp.: N. the act of packing or binding closely; the collection of timbers which bind and support a roof or a beam. TRUSSED, pp. *trūst*. To TRUSS UP, to make close or tight; to hang.

TRUSS: instrument employed in the palliative treatment of Hernia (q.v.), with the view of preventing its descent, and, in some cases, of effecting a permanent cure. It consists essentially of a pad or cushion attached to a metallic spring, with straps so arranged that its position may be retained during the varied postures of the body. The necessity of having recourse to a suitable T. the moment that the slightest protrusion shows itself in any of the parts liable to hernia cannot be too strongly urged. At whatever period of life a hernia occurs, if properly attended to, and judiciously supported, it usually gives little trouble, and in early life it may often be cured; whereas, if neglected, increase of bulk, and, subsequently, diseased states of the parts, often terminating in death, will almost certainly occur. A surgeon should always be consulted in the choice of the instrument. There are occasional cases in which the common T. fails to support a rupture comfortably; in these cases various instruments, usually the property of special instrument-makers, are often serviceable; and the surgeon should be acquainted with the peculiarities of the pieces of apparatus known as the Mocmain Lever T., Coles's T. (with a spiral spring acting on the pad), Salmon and Ody's Self-adjusting T., Eggs's T., and several others. The patient must expect to find the T. somewhat uncomfortable for a week or two, but will soon become used to it. The skin of the part on which it presses should be regularly washed and bathed with Eau de Cologne or spirit, to prevent formation of boils on it.

TRUST.

TRUST, *n.* *trústr* [Icel. *traustr*, trusty: Norw. *traust*, firm, steady: Dan. and Sw. *tröst*, consolation: Goth, *trig-gws*, faithful; *trausti*, a covenant: Ger. *trost*, help, protection (see **TRUE**)]: a resting of the mind on the integrity, justice, or friendship of another; reliance; confidence; the person or thing that is the ground of confidence; credit given without examination, or without security of any kind; that which has been given or received in confidence; something committed to charge of which an account must be given; confidence in supposed honesty; credit given on a promise of payment; in *law*, a confidence reposed in a person by making him the nominal owner of property which he is to hold or use for the benefit of another, or the estate so held (see below): *V.* to rely on; to believe; to credit; to venture confidently; to commit to the care of in confidence; to hope, as 'I *trust* he will do well'; to be confident of something future; to sell to upon credit; to confide or have confidence in; to be won to confidence. **TRUST'ING**, *imp.*: **ADJ.** confiding. **TRUST'ED**, *pp.* **TRUST'ER**, *n.* *-ér*, one who trusts. **TRUST'INGLY**, *ad.* *-lǝ*. **TRUSTEE**, *n.* *trús-tě'*, person who holds an estate or property of any kind for the benefit and use of another (see **TRUST**, below). **TRUSTEE'SHIP**, *n.* *-shíp*, the office of a trustee. **TRUSTEE-PROCESS**, *term*, in some New England states, for **GARNISHMENT** (see **GARNISH**, etc.). **TRUST'FUL**, *a.* *-fúl*, full of trust; worthy of trust; faithful. **TRUST'FULLY**, *ad.* *-lǝ*. **TRUST'FULNESS**, *n.* quality of being trustful. **TRUST'LESS**, *ad.* not worthy of trust. **TRUST'LESSNESS**, *n.* *-nės*, the state or quality of being trustless. **TRUSTY**, *a.* *trús'tǝ*, that may be safely confided in or trusted; honest; faithful; that will not fail; firm; strong. **TRUST'ILY**, *ad.* *-lǝ*. **TRUST'INESS**, *n.* *-nės*, the quality of being trusty; fidelity; honesty. **TRUST'WORTHY** *a.* worthy of trust or confidence; faithful; honest. **TRUST'WORTHINESS**, the state or quality of being trustworthy. To **TRUST IN**, to place confidence in; to rely on. To **TRUST TO**, to depend on; to rely on. **TRUST-DEED**, a deed creating a trust; specifically, in *Scots law*, legal document in which the property of another is conveyed or made over to a person or persons called *trustees* for a specific object, e.g., payment of the debts of the truster. **TRUST ESTATE**, the property conveyed by trust-deed.—**SYN.** of 'trust, *n.*': faith; hope; dependence; reliance; belief; expectation; credit; deposit.

TRUST, in *Law*: a right of property, real or personal, confided to one person (*trustee*), to be by him held for the benefit of another person (*Cestui que trust*—q.v.—or *beneficiary*). The enforcement of the terms of a T., as also the providing a new trustee instead of one deceased or refusing to accept the T., are matters for a court of chancery or similar court. A T. means a species of divided proprietorship, whereby the trustee acts as a custodier or strong-box; and yet the benefit of the property is not his, but belongs to the *cestui que trust*. The person who creates the trust is called sometimes the *celui que trust*. As a general rule, all property, real or personal, may be made the subject of a T., provided some policy of the law or statute does not pre-

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vent it. Trusts are most frequently created by a will; but they may be declared by word of mouth as regards personality; while as to land, some writing is necessary. No particular words are necessary, but the intention of the party making the T. must be clear. Thus, in wills, a testator sometimes uses words which do not amount to an express T., but speaks of his 'wish and desire,' or his 'confidence,' that the executor or trustee shall do certain things. These words are called in the law precatory trusts, but are enforced in the same way as those in more direct language, if no uncertainty exists as to the purposes or mode of carrying out the T. But if a testator merely recommends an executor to 'consider certain persons,' 'to be kind to them,' or 'to do justice to them,' or 'to make ample provision for them,' etc.—such expressions are treated as too vague to be binding; therefore the executor may disregard them, or use his own discretion. A trustee's office is not compulsory, but gratuitous; therefore he need not accept the office unless he pleases. But if he once accept, he is not at liberty afterward to renounce, unless the T.-deed contain a provision enabling him to do so, or the court of chancery for good reasons discharge him. A trustee cannot delegate the office to a third person, but continues personally bound to do his duty. Where there are several trustees appointed, the office is considered joint, so that, if one dies, the survivors continue to exercise the office. As a general rule, all must join in doing any act: but if the T. is of a public nature, a majority may bind the minority. Each trustee is liable only for his own acts or defaults; and this is so even though, for form's sake, he join his co-trustees in signing a receipt, if he can show that he never received the money in point of fact. Nevertheless, when money lies in the hands of one trustee, the others ought not to be satisfied with his mere statement that the money has been invested by him, but should see that the investment has been or is actually made. Another rule is, that a trustee is not allowed to make a gain of his office; and so jealous is an English court of this rule, that the trustees of a large estate are not allowed even to sport over the estate—at least so as thereby to keep any valuable right of that kind for their own pleasure. Hence, a trustee is personally liable if he trade with the T. funds, or buy shares in a joint-stock bank; for even though the T.-deed authorize this to be done, he will be liable to pay the debts of the trading concern, though far exceeding the amount of the trust funds. The duty of a trustee, expressed in general terms, is 'to protect and preserve the T. property, and to see that it is employed solely for the benefit' of the beneficiary. The quality and the duration of the estate of a trustee are to be determined by the purpose and exigency of the T.; hence, if the instrument creating the T. declares that the estate goes to the trustee and his heirs, the term of the T. may be shortened if thereby the purposes of the creation of the T. are attained. A trustee can be sued for any breach of T., and must make good out of his own estate losses caused to the T. estate by his negli-

gence. Not only must he account for the principal and income of the T. property—he is even liable for a sum equal to that which he might have received through good management: thus, he is liable for legal interest on T. moneys which he needlessly suffers to lie unused.

The term T. as applied in the United States signifies an arrangement for the control of several companies under one direction, to cheapen expenses, regulate production, and lessen competition. The early method was that of incorporation. Each party was or became incorporated; then the several corporations surrendered their stock or business to a board of trustees, who issued trust certificates, which were similar to shares of stock, in lien thereof, and kept the full management of the properties. The Standard Oil Trust of 1882, the first of the trusts, comprising 20 companies, was organized in this way. In 1892 the courts of New York decided that corporations operating under charters granted by the legislature of that state cannot lawfully form T. Under this ruling the Standard Oil Trust dissolved and the property was distributed among 20 different companies, in each of which the original 9 trustees, as individuals acting together, held control. The Sugar T., a combination of 16 of the great refineries of the United States, which had been dictating prices to consumers, was dissolved at the same time, as was the Whisky T., but both were reorganized as single companies to which the constituent members sold their property outright. Nearly all the modern combinations are of this nature, and the majority have been registered in New Jersey where the laws relating to companies are very liberal and taxes are light. Another form of combination is where the new company buys a majority of the stock of the combining companies which it then controls by appointing the directors. Still another is where former competitors obtain holdings of each other's stocks and are represented on the directorate, or several companies acquire another on this basis. In 1900, June, there were 183 combinations owning 2,203 plants, only 63 of which were organized prior to 1897. The issued capital was \$3,085,200,000. In 1901 alone 71 great combinations were formed, including the United States Steel Corporation, owning the stock of 10 large companies, having a cap. of \$1,432,000,000, and controlling 75 per cent. of the industry in this country. In 1902 the International Mercantile Marine Co., with cap. stock of \$120,000,000, was formed to secure a share of the Atlantic shipping trade. In the United Kingdom voluntary federations of manufacturers to regulate prices abound in all branches of industry, especially in coal, iron, and grain milling. On the Continent T. in American sense are almost unknown; but it is a common thing for independent manufacturers or traders to form a syndicate or kartell, binding themselves by contract for specific purposes for a longer or shorter period.

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Among the advantages claimed for T. are these: "raw material bought in large quantities is secured at a lower price; the best quality of goods is produced; the specialization of manufacture on a large scale, permitting the fullest utilization of special machinery and processes, decreases cost; the plants which are best equipped and most advantageously situated are run continuously. There is no multiplication of the means of distribution: a better force of salesmen takes the place of a larger number; terms and conditions of sale become more uniform, and credits, through comparisons, are more safely granted; the aggregate of stocks carried is greatly reduced, thus saving interest, insurance, storage, and shipment; greater skill in management accrues to the benefit of the whole instead of a part, and large advantages are realized from comparative accounting and comparative administration. The opponents of T. declare that they practically establish monopolies, destroy competition, control the raw material, and increase the price of finished products, injuriously affecting both producers and consumer, lessen the employment of labor, arbitrarily fix the terms and conditions thereof, deprive individual energy and small capital of their opportunity for betterment.

Illinois, Texas, New York, and some other states have passed stringent laws against T. and Congress in 1890 passed an anti-trust act, and in 1903 another having as its purpose the separation of interstate commerce and railroads from other anti-trust legislation. The latter provides for the punishment of corporations by fine instead of imprisonment; also for injunctions to prevent discriminations. Under the law of 1890, the Beef and other T., have been prosecuted. In annual messages and speeches President Roosevelt has insisted that in the interest of the public the government should have the right to inspect and examine the workings of the great corporations engaged in interstate business, and in case Congress lacked the constitutional power to pass an act to that end that a constitutional amendment should be submitted to confer the power.

TRUTH, *n.* *tróth* [see TRUE]: conformity to fact or reality; freedom from falsehood; fidelity; constancy; sincerity; honesty; virtue; that which is true; a fixed principle or proposition: V. in *OE.*, to affirm as true. TRUTHFUL, *a.* *-fúl*, habitually disposed to speak truth; closely adhering to truth. TRUTHFULLY, *ad.* *-lǵ*. TRUTHFULNESS, *n.* *-nēs*, the state of being truthful. TRUTHLESS, *a.* *-lēš*, wanting in truth. TRUTHLESSNESS, *n.* *-nēs*, the state of being truthless. IN TRUTH, in reality; in fact. OF A TRUTH, in reality; certainly. FIRST TRUTHS, intuitive matters of belief. TRUTH-SPEAKING, *a.* uttering truth.

TRUXILLO—TRY.

TRUXILLO, *tró-čhēl'yō*: port of the republic of Honduras, dept. of Yoro; on the w. shore of the Bay of T.; lat. 15° 55' n., long. 86° w. T. was founded 1524, and was for many years a flourishing place. It was the seat of a bp. 1539-61. Exports, timber, metals, and hides.—Pop. about 4,000.

TRUXIL'LO: town of Peru, cap. of the prov. of Libertad; near sea-coast, about 300 m. n.n.w. of Callao. The port of T. is Huanchaco, about 8 or 9 m. n.w., from which considerable quantities of rice and spices are exported. T. was founded 1535 by Pizarro, who named it after his birth-place in Spain. It is the seat of a bishop; has a so-called univ. and an episcopal seminary.—Pop. (1889) abt. 11,000.

TRUXIL'LO: town of Venezuela, cap. of the dept. and state of T.; about 137 m. s.e. of Maracaibo. Pop. 2,648.—Pop. of dept. 27,819; of state 108,672.

TRUXIL'LO, or **TRUJIL'LO**: town of Spain, prov. of Cáceres; on the great highway from Madrid to Badajoz; birthplace and burial-place of Pizarro (q.v.). The people are engaged in weaving, tanning, pottery-making, etc.; and there is profitable trade in cattle. T. has five churches, eight convents, four hospitals, and several palaces.—Pop. (1887) 9,430.

TRUXTUN, *trŭks'tŭn*, **THOMAS**: naval officer: 1755, Feb. 15—1822, May 5; b. on Long Island, N. Y. He became a sea-farer at the age of 12. At the outbreak of the revolutionary war he became lieut. on board the *Congress*, privateer; later, as commander of other privateers, he performed many brilliant feats and took as prizes many British vessels. Commanding the U. S. frigate *Constellation*, 38 guns, he captured the French frigate *L'Insurgente*, 40, off Hen's Island, W. Indies, the loss of the French being 29 killed, 44 wounded; T.'s loss, 1 killed, 2 wounded (1799, Feb. 8). In an action with the French frigate *La Vengeance*, 54 guns, off Guadeloupe, T.'s vessel lost 14 killed, 25 wounded; the French loss was 50 killed, 110 wounded. *La Vengeance* surrendered, but escaped actual capture, the vessels being separated by a squall (1800, Jan.). T. was appointed to command a squadron destined for Tripoli 1802; but his request for a capt. to command the flagship having been denied, he wrote to the sec. of the navy a letter which was construed as a tender of resignation, and T. was obliged to quit the service.—T. wrote *Remarks, Instructions, and Examples relating to Latitude and Longitude* (1794).

TRY, v. *trī* [F. *trier*, to pick, to select: It. *tritare*, to grind, to sort or sift—from mid. L. *tritārē*, to triturate—from L. *tritrus*, pp. of *tererē*, to bruise, to grind: Piedm. *trié*, to grind or wear down]: to attempt; to endeavor; to make or use exertion in order to perform; to make experiment on; to use means; to prove by experiment: to act as a test; to bring to a test; to examine; to bring before a tribunal or into a court of law; to examine judicially by witnesses; to strain, as one's eyes; to purify or refine: N. an attempt; an experiment. **TRY'ING**, imp.: **ADJ.** acting as a

TRYGON—TSARSKOE SELO.

test, as to one's patience or principles; 'severe: N. a testing. TRIED, pp. *trīd*: ADJ. examined by test. TRIER, TRIABLE, TRIAL: see these titles in alphabetical order. To TRY BACK, to return on one's track, to gain something lost. To TRY ON, to fit on an article of dress; *familiarly*, to attempt, usually in phrase, 'to *try it on*.' TRY-SAIL, among *seamen*, a fore-and-aft sail set with a gaff, and with or without a boom, on the lower masts of square-rigged vessels. It is similar to the spencer of brigs or schooners, and to the spanker or driver of ships; and is hoisted on the main or fore mast as an extra sail, to take advantage of a favorable breeze. Sometimes a special mast, called a *try-sail mast*, is erected immediately abaft the mainmast, to hoist it upon. A try-sail is also used without the boom, especially by small vessels, instead of their mainsail during foul weather: in this case it is called a *storm try-sail*. TRYING-HOUSE, the place where whale's blubber is reduced to oil and refined.—SYN of 'try, v.': to strive; aim; assay.

TRY'GON: see STING RAY.

TRYMA, n. *trī'mă* [Gr. *trūma*, a hole, an opening]: in *bot.*, a fruit resembling a drupe, as the walnut, having a coriaceous or fleshy epicarp and mesocarp, one-celled and one-seeded; a two-valved bony endocarp, having partitions on the inner concave surface, as the walnut.

TRYON, *trī'on*, WILLIAM, LL.B.: about 1725–1788, Feb. 27; b. Ireland: milit. officer. He served in the Brit. army in early life; was lieut. gov. of N. C. 1764–5, and gov. 1765–71, and gov. of N. Y. 1771–78, at the period of the outbreak of the revolution. He returned to England 1778; was promoted col. 1772, maj. gen. 1777, and lieut. gen. 1783. He received his degree from King's College, New York, 1774. His administrations were noted for the extreme cruelty with which he treated the colonial patriots, and for the wanton destruction of Danbury, Fairfield, and Norwalk, Conn., by personally conducted expeditions from New York.

TRYST, n. *trīst* or *trīst* [a variant of TRUST, which see]: an appointment to meet; an appointed place of meeting; an appointed market: V. to agree to meet; to engage a person to meet one at a particular time or place. TRYST'ING, imp.: N. an appointment. TRYST'ED, pp. TRYST'ER, n. *-ēr*, one who trysts. TRYSTING-DAY, an arranged day of meeting or assembling. TRYSTING-PLACE, a place designated for a meeting or for an interview; a rendezvous.

TSAR, n. *zâr*: see CZAR. TSARINA, n. *zâr-ē'nă*, or, and more correctly, TSARITSA, n. *zâr-īt'să*, the empress of Russia.

TSARSKOE SELO, *tsârs'kō-â sâ'lō* ('Imperial Town'): town of Russia, province of St. Petersburg; 13 m. s. of St. Petersburg. It is the royal residence and favorite resort of the imperial family. The carriage-road from the cap. to T. S. was constructed by Empress Catharine II. at a cost of 1,000,000 rubles; but the *route* now preferred is that of the railroad—the first laid down in Russia. The façade of the great palace of T. S. is 780 ft. long. Originally every

statue, pedestal, and capital of the columns, vases, etc., were covered with gold leaf; only the dome and cupolas of the church are now gilded. The interior of the chapel is lavishly gilded, the ceiling being one sheet of gold. In the palace grounds, 18 m. in circumference, are an arsenal, with a fine collection of armor, weapons, and accoutrements of all kinds, and several curious ornamental buildings, statues, artificial ruins, grottoes, lakes, waterfalls, etc. —Pop. 14,603.

TSCHUDI, *tshó'dē*, or SHUDY: ancient and noble family of Switzerland, distinguished as authors, statesmen, and warriors. The two following are most notable.

GILLES or AEGIDIUS T.: 'Father of Swiss History.' 1505–1572, Feb. 28; b. in Glarus. He studied at Basel, Vienna, and Paris, and travelled in Switzerland and Italy. On his return he took an active part on the Rom. Cath. side during the struggles of the Reformation in Switzerland, and in consequence was forced for a time to leave his native canton (1562). Two years later he was permitted to return. He was a prolific writer, not less than 166 works of his (in print or in MS.) being known. The most valuable is a *History of Switzerland* (Basel 2 vols. 1734).—See Fuchs's *Aegid. Tschudi's Leben und Schriften* (2 vols. St. Gall 1805).

JOHANN JAKOB VON T.: eminent traveller and naturalist: b. at Glarus, 1818, July 25. After completing his studies at Leyden and Paris, he undertook (1838) a voyage round the world; but circumstances restricted his design to an investigation into the nat. history and ethnography of Peru, where he remained five years. He was Swiss ambassador at Vienna 1866–83. T.'s principal works are: *Peru: Reiseskizzen aus den Jahren 1838–42* (2 vols. St. Gall 1846); *Untersuchungen über die Fauna Peruana* (St. Gall 1844–47, 76 plates); the splendid work *Antigüedades Peruanas* (Vien. 1851), executed in conjunction with Don Mariano Eduardo de Rivera (Eng. transl. 1854); *Die Kechuasprache* (2 vols. Vien. 1853), containing a grammar and dictionary of the Peruvian language; and *Reisen durch Südamerika* (5 vols. 1866–69).

TSËNG (or TSŨNG), KI-TSĚH, *kē-tsĕh tsŭng*, Marquis: eminent Chinese statesman and diplomat, fellow of the Hanlin College: 1839, Dec. 7—1890, Apr. 12; b. prov. Hûnan, central China. T. was the eldest son of the late grand sec. Tsêng-Kwo-Fan, from whom he inherited the title *Hou* (2d order of nobility), commonly rendered 'Marquis.' His father had received this title as a reward for his services as chief in command in suppressing the Tae-ping rebellion. When less than a year old, T.'s father removed to Peking, and there T. received his education. He accompanied his father through all his operations against the Tae-pings, acting as his sec. for 12 years. In 1870 he had audience of the emperor, and was appointed an official of the fifth rank. His father died 1872, and, according to Chinese custom, T. was compelled to retire for 27 months (the usual period of mourning), during which he studied English. On his way back to Peking, he was hurriedly re-

TSETSE—TSONG-KHA-PA.

called by news of the death of his mother. This necessitated a further period of retirement, also devoted to English. His mourning over, at last he arrived at Peking, 1877, Aug., and had audience of the emperor; and in the following year was appointed minister plenipotentiary to France and Great Britain, arriving in London 1879, Jan. 1. In 1880, Mar., he was made ambassador and instructed to open negotiations for settlement of difficulties arising out of the rejection by China of the treaty of Livadia, in regard to the retrocession of Kuldja (q. v.). The treaty concluded by T. was ratified 1881. His settlement of the Tonquin difficulty showed diplomatic ability of the highest order. Returning to Peking 1886, he was made a sec. of the Tsûng-li-Yamen, or bureau of foreign affairs, and pres. of the board of admiralty, a new department consequent on the separation of naval affairs from the war dept. T. died at Peking, and was buried with great state in Hûnan.

TSETSE, *tsět'sê*: dipterous insect (*Glossinia morsitans*), a terrible pest of parts of s. Africa. It is not much larger than the common house-fly, of brown color, with four yellow bars across the abdomen. The wings project considerably beyond the abdomen. It is remarkably alert, at least during the heat of the day, and dexterously avoids any attempt to catch it with the hand. 'Its peculiar buzz,' Livingstone says, 'can never be forgotten by the traveller whose means of locomotion are domestic animals.' Its bite is almost certain death to the ox, horse, and dog. Livingstone, in one of his journeys, lost 43 oxen by it. Yet the bite is harmless to man, to the mule, the ass, and apparently to antelopes and the other wild animals of the country. The proboscis is adapted for piercing the skin, and the fly lives by sucking blood. At first no effect is perceived; but in a few days after an ox has been bitten, the eyes and nose begin to run, 'the coat stares as if the animal were cold,' a swelling appears under the jaw and sometimes at the navel, emaciation and flaccidity of the muscles ensue, purging, sometimes staggering and madness, finally death. On dissection, the cellular tissue under the skin is found injected with air, as if a quantity of soap-bubbles were scattered over it.—Livingstone's *Travels*.

TSONG-KHA-PA, *tsöng-châ-pâ* (orthographically, *bTsong kha pa**): great reformer of Lamaism (see LAMA—*Lamaism*), who, by his co-religionists, was deemed an incarnation of the Bodhisattwa Amitâbha, or, according to others, of Manjus'rî or Vajrapân'i, and after his death was canonized by the Lamaist Church: b. in the middle of the 14th c., in the country Amdo, in the place where now stands the celebrated convent ssKu'bum; d. 1419. In the legends of Tibet the statements following appear: T.-K.-P. was conceived by his mother in a supernatural, immaculate manner: he was born with a white beard, and from the day of

* The small letters prefixed to the initials of the Tibetan words in this article are not pronounced.

T-SQUARE—TSURNGA.

his birth expressed himself clearly and fluently, and discoursed profoundly on religious matters. In his third year he resolved to renounce the world, and to devote himself to prayer and contemplation. In his travels he halted near L'Hassa or H'Lassa (q.v.), and studied assiduously the Buddhistic law, and soon became convinced of the necessity of reforming the actual worship and discipline of the Lamaist Church. When his teaching had attracted a great number of pupils, these, to distinguish themselves from the followers of the old system, who wore a red cap, assumed as their badge a yellow cap. When the great Lama, head of the church, attempted to stop the movement, he was immediately confused and overwhelmed in the presence of T.-K.-P. Thus far the legend. It is a historical fact that thousands of pupils thronged to hear and to adopt his doctrine. In 1407 or 1409 he founded the convent *dGa' lDan*, where (it is now believed) his body is preserved free from decay in a coffin suspended, like Mahomet's, between the earth and heaven; and later he founded other two convents, which, together, it is said, are now peopled with 30,000 monks of the yellow cap. His works are numerous and voluminous; the most celebrated of them is the *Lam nim chhen po*, or 'The Great Step-road toward Perfection,' consisting of three parts—namely, 'the road of the little, middle, and great man.' The sect which he founded is called the sect of virtue; and the principal reforms which he introduced into the Lama religion, as it then existed, were compulsory celibacy for the monks—the Lamas of the old doctrine being conditionally permitted to marry—prohibition of sorcery and necromancy—extensively practiced by wearers of the red cap—and the institution, at fixed periods, of religious exercises and of common prayers, and, consequently, of regular meetings of the whole community. His greatest achievement, however, was the organization of the Lamaist hierarchy as it still exists: see LAMA—*Lamaism*. His portrait is seen in all the temples of the yellow religion, often between those of the two Lamaist popes. His canonical name is 'the Celebrated Sage.'—See C. F. Koeppen, *Die Lamaische Hierarchie und Kirche* (Berlin 1859), and works quoted therein.

T-SQUARE: a rule having a cross-piece (called a *helve*) at one end for making perpendicular lines, or for cutting angles—so called from its shape; a T-rule. **RIGHT TO A T.** perfectly square or correct, as if a T-square had been applied.

TSURNGA, *tsû-rông'ă*: seaport-town of Japan. cap. of the ken or administrative division of T., prov. of Echizen; on the n.w. coast of the main island, at head of a deep bay forming the finest harbor on the Sea of Japan. It possesses one of the oldest Shinto temples of the country, Kei-no-miya. Junk-building is the chief industry.—Pop. 15,000.

TSUSHIMA—TUBA.

TSUSHIMA, *tsû'shē-ma*: two outlying islands forming a province of Japan, commanding the s. entrance of the Sea of Japan, and therefore of considerable strategic importance; 261 sq. m. Idzu-no-hara, the cap. (lat. 34° 12½' n., long. 10° 29' w. of Tokio), is on the s. island, which contains many mountains and deep ravines. Wani-ura, on the n. island, is only 32 m. from Fusan, a treaty-port of Corea. The channel which divides the two islands varies from a few yds. to several miles in width. T. exports large quantities of dried fish, sea-weed, mushroom, and timber, chiefly to China. Gold and silver have been mined in T., and there are beds of coal of good quality. Ten thousand men forming the advance-guard of Kublai Khan's expedition for the conquest of Japan in the 13th c. were defeated here with great slaughter.—Pop. town 8,800; province 30,000.

TUAM, *tyŋ'am*: inland market-town and episcopal seat of Galway, Ireland; on the Harrow, branch of the Clare; 125 m. w. of Dublin, with which it is connected by railway. It was an archiepiscopal see from the 12th c., and in the Rom. Cath. Church still has this rank; but 1839 the province was united, in the Established Church, with the archbishopric of Armagh, of which T. is now a suffragan see. T. has little trade, except in agricultural produce; but there are tanneries, a flour-mill, and a brewery. The Rom. Cath. church is a modern structure of great size and very striking architecture. Both the Rom. Cath. abp. and the Prot. bp. have residences in T. Under the direction of the former is the College of St. Jarlath, numerously attended, designed chiefly for clerical students. The schools, under care of the brethren of the Franciscan order, are numerously attended.—Pop. (1871) 4,423; (1881) 3,567, more than 3,000 being Rom. Catholics; (1891) 3,012.

TUARIKS': see **BERBERS**.

TUB, n. *tüb* [Dut. *tobbe*; Low Ger. *tubb*; Ger. *zubere*, a two-handled vessel, a tub—from OHG. *zwo*, two, and *beran*, to bear]: an open vessel made of staves and hooped, used for various purposes, as a wash-tub, butter-tub, etc. (compare bath-tub); a box in which coals are sent up the shaft of a coal-mine; a small liquor-cask formerly used in smuggling-operations; in *OE.*, a state of salivation, so named because patients were formerly sweated in a tub: V. to plant, set, or put in a tub; *familiarly*, to take a bath. **TUB BING**, imp.: N. in *mining*, the lining of a shaft with wood or iron for the purpose of preventing the falling in of the sides or of loose material from them, often made air and water tight. **TUBBED**, pp. *tübd*. **TUB'BY**, a. *-bī*, *familiarly*, like a tub. **TALE OF A TUB**, any ridiculous story.

TUBA, n. *tū'ba* [L., a trumpet]: a brass wind-instrument, the lowest as to pitch in the orchestra; also a high-pressure reed-stop of 8 ft. pitch on an organ; called also *tuba mirabilis*, *tuba major*, *tromba*, or *ophicleide*.

TUBE—TUBERCULOSIS.

TUBE, n. *tūb* [F. *tube*; It. *tubo*, a tube—from L. *tubus*, a pipe, a tube]: a pipe; a hollow cylinder of wood, metal, or glass for conveying fluids, etc.; a siphon; one of the vessels of animals or plants for conveying fluids or other substances; a telescope, particularly without the fittings: **V.** to furnish with a tube or tubes. **TU'BING**, imp.: **N.** tubes collectively. **TUBED**, pp. *tūbd*. **TEST-TUBE** (see under **TEST** 3). **TU'BIFORM**, a. *-bī-fawrm* [L. *forma*, shape]: in the form of a tube.

TUBER, n. *tū'bēr* [L. *tuber*, a hump, a knob or excrescence—from *tumēō*, I swell]: a thickened, roundish, underground stem, as a potato, a turnip, etc.; in *surg.*, a swelling; in *anat.*, the rounded projection of a bone. **TUBERIFEROUS**, a. *tū'bēr-īf'ēr-ūs* [L. *ferō*, I bear]: producing or bearing tubers, as the potato.

TUBER: in *botany*, a subterranean stem, thickened by approximation of the nodes and swelling of the internodes, with latent buds along its sides ready to produce new plants in the succeeding year. The cellular tissue is unusually developed, and in general a large quantity of amylaceous matter is accumulated, whence the economical value of tubers, as in the potato, the Jerusalem artichoke, and the arrow-root. Tubers are capable of being employed for propagation of the plant, by division into portions, each containing an *eye* or bud, according to the usual mode of planting potatoes. The most valuable tubers are those above named, but many others are used in different parts of the world: see **OXALIDÆ**: **TROPÆOLUM**: **ETC.**

TUBERCLE, n. *tū'bēr-kl* [OF. *tubercle*; F. *tubercule*—from L. *tuber'culum*, a small hump or protuberance—from *tūber*, a hump: It. *tubercolo*]: a little knob; in *med.*, a small, hard, local tumor, which, when deposited in numbers on the lungs, and suppurating, produces the disease known as consumption (see **TUBERCULOSIS**): a pimple or tumor appearing on the skin; in *bot.*, a swollen simple root, as of some orchids; a little tuber. **TUBERCLED**, a. *tū'bēr-kl'd*, having or affected with tubercles; in *bot.*, covered with warts. **TUBERCULAR**, a. *tū-bēr-kū-lēr*, full of small knobs or tubercles: caused by tubercles, as consumption; prone to generate tubercles. **TUBER'ULATE**, a. *-lāt*, tubercled; in *bot.*, having tubercles. **TUBER'CULOUS**, a. *-lūs*, or **TUBER'CULOSE**, a. *-lūs*, affected with tubercles; disposed to tubercular diseases.

TUBERCULIN—TUBERCULOSIS.

TUBERCULIN, *tū-bēr'kū-līn* [L. *tuberculum*, tubercle, and term. *-in*]: paratoloid; the substance used by Prof. Robert Koch for cure of tuberculosis: see KOCH, ROBERT.

TUBERCULOSIS, n. *tū-bēr'kū-lō'sīs* [L. *tuber'cūlum*, a small hump]: a disease caused by a specific rod-shaped micro-organism, the bacillus tuberculosis, discovered by Robert Koch in 1882, and characterized by the development of small masses of inflammatory tissue, called tubercles. The irritating action of the bacillus causes an extravasation of lymphoid cells, one or more of which in the centre usually have several nuclei, the middle zone being compressed into an 'epithelioid' form, while the outer cells remain unchanged. This unit of inflammation may be joined to others so as to form masses the size of a millet seed, miliary tubercles, or much larger aggregations.

The question naturally arises, Why does this formation of small tumors constitute a serious and fatal disease? The answer is, 1, that the bacilli themselves secrete poisons, which are depressing to the heart, which cause fever and a general weakening of vitality; 2, that nutrition and strength are exhausted in forming useless structures; 3, that these tissues, in spite of drawing on the general nutritive store of the body, are not sufficiently supplied with blood to prevent their breaking down into necrotic masses, or by the aid of bacteria of suppuration, into abscesses; 4, that the bacteria of suppuration, thus affording lodgment, add their toxins to those of the tubercle bacilli proper.

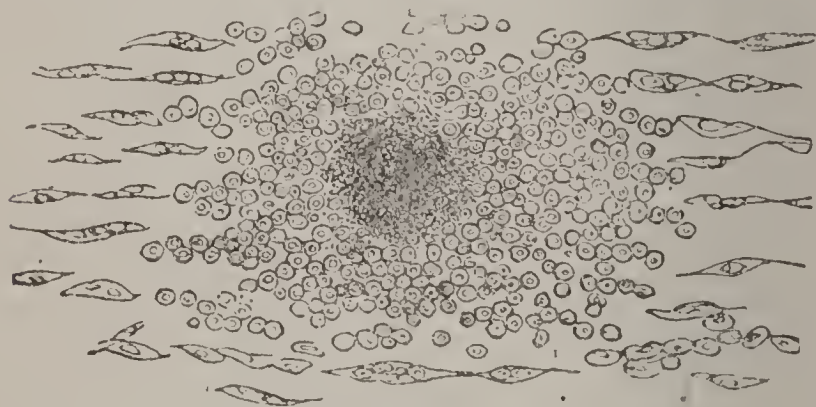
Tuberculosis is a disease of many manifestations. Occurring in the lungs, it constitutes consumption; in the larynx, it produces ulcerations, with huskiness or entire loss of voice as an indication of the diseased process. In the bowel it also causes ulceration with consequent diarrhea, which, in turn, produces emaciation and finally death by exhaustion—the whole course of the disease being indicated by the term marasmus. Bones are especially subject to tubercular inflammation, probably three-quarters of all cases of caries or ulceration of bone being due to this cause, most of the remaining cases being of syphilitic origin; Pott's disease of the spine is tubercular caries of the vertebræ. Hip-joint disease is usually a tubercular arthritis; white swelling of the knee is a precisely analogous process, and similar inflammation may occur in other joints. Sinuses crowned with masses of unhealthy granulation tissue and leading to diseased bone, near or remote from joints, are frequently tubercular. Many brain tumors are tubercular masses, and basilar meningitis, which is almost always fatal, is of the same origin. Lupus is a mere technicality for skin-tuberculosis. The testicle, kidney, and urinary passages are frequently the seat of tuberculosis and pleurisy is frequently, and peritonitis occasionally, tubercular. In short, almost all tissues and organs of the body are liable to the inroads of this disease, which has been too truly termed, 'the scourge of civilization.'

Tubercular inflammations, though ultimately presenting

TUBERCULOSIS.

the same appearances, differ according as the germs are lodged from the air upon pre-existing areas of inflammation or as they are disseminated from the blood current. In a sense, it is correct to speak of a 'cold on the lung running into consumption.' A person having an ordinary bronchitis may inhale dust containing the dried exhalations of a consumptive, the virulence of the germs being unabated by anything short of absolute destruction by heat. The secretion in the lungs affords an excellent pabulum for the bacilli which might otherwise be strangled by the scavenger cells of the blood or be passed out after having rested in the lungs as foreign material. In the rich soil provided for them, they multiply, producing tubercles, at first superficial, but tending to infiltrate deeper structures. Under the most favorable experimental circumstances, the development of large numbers of tubercle bacilli from a few ancestors occupies nearly two weeks, much longer than in the case of germs of suppuration, which may breed a million-fold in a day or two. Thus, at the outset, it is impossible to distinguish between a simple and a tubercular inflammation of the air-passages. Later, however, the sputum contains an abundance of bacilli.

When the bacilli enter the tissues from the blood, they breed under cover, so to speak, producing miliary tuber-



Tubercle.

cles and the systemic symptoms of infection at first without local signs. The disease, in this form, is called miliary tuberculosis, and it may simulate typhoid, malaria, or some other continued fever, and an exact diagnosis is extremely difficult. Obviously, there can be no contamination of sputum or other secretions with bacilli till epithelial barriers have been broken down. Thus, while the demonstration of tubercle bacilli in the sputum or other secretion is positive evidence of the existence of the disease, their absence, unless persistent, is not of much weight as an argument against the existence of tuberculosis.

As to the predisposing causes of tuberculosis, heredity and diathesis—the latter being also hereditary—are usually mentioned. There are two types of the tubercular diathesis, one the pretty, blonde type, with thin, fair skin, regular features, light hair, and general lack of pigment, slight deposition of fat, clubbed fingers, and a 'delicate' ap-

pearance; the other the ugly type, with sallow complexions, dark, coarse, bristly hair, stunted development of the long bones, and irregular features. But it must be admitted that some very typical exemplars of these types escape the disease, and that all sorts of complexions, features, and builds are found among tubercular patients. The term *scrofula* is applied, sometimes to the manifestation of one or other of these diathetic pictures, sometimes to the appearance of mild tuberculosis of the skin and lymph-glands, sometimes to quite foreign conditions. The term is used so vaguely and is so connected in history with the superstition of the efficacy of the 'king's touch' that it is better to discard it altogether. A family history of tuberculosis can be obtained in most cases of the disease—and, more or less distantly, from nearly everyone without reference to physical condition—and, till the true germ cause of the disease was known, heredity was considered the prime factor. But there are not a few who oppose this view and emphasize the contagiousness of the disease. Thus, A. L. Benedict, in the *Popular Science Monthly* of Nov. 1895, says 'on the face of the matter, it would seem that a germ that kills a fifth of the civilized human race, is not very exacting as to the soil afforded. * * * Nearly everyone is, at one time or another, susceptible to tuberculosis and escapes or becomes a victim according as he is free from or exposed to contagious influences. A mother and her baby both die of consumption, and heredity is blamed, but does the child inherit the bacilli or does it imbibe them in the milk—where they have been repeatedly found—or are they inhaled as the mother bends over the child and smothers it with kisses? Again, brothers and sisters drop off, one after another, and it is said that "consumption runs in the family;" but we would seek another explanation if the same succession of deaths occurred from scarlet fever. Tubercle bacilli have been found in the dust on top of door and window casings, in carpets, bedding, and wall paper. Is it not rational to suppose that these foci of infection have more to do with the death of successive members of the family than a hereditary taint? When we note that members of the family who leave home often escape the disease and that other persons, occupying the same house latter, contract it, is not the evidence tolerably clear?'

Tuberculosis is not without a tendency to recover. Each miliary tubercle tends to necrosis, the tissue becoming a cheesy mass in which, later, lime salts may be deposited. In this process, the bacilli in the centre are quite apt to be destroyed. If all were thus destroyed, the slight unfavorable reaction from the necrotic process would be more than compensated for, and the disease would be strictly self-limited, but, unfortunately, enough bacilli usually survive to start new foci, and the disease increases. Still, autopsies on persons who have died from accident or from some other non-tubercular cause, often reveal the encapsulated caseous or calcified remains of previous

tubercular disease, usually of the lung. Thus a very large proportion of the human race have, at one time or another, been the seat of a tuberculous process from which recovery has occurred, either spontaneously or as the result of treatment for a condition which was not positively identified as tuberculosis. Surgical tuberculosis is also subject to removal, though by more or less mutilating operations, or to encapsulation and latency. To this latent form of tuberculosis may be ascribed the entrance of bacilli into the blood and the lighting up of a general miliary tuberculosis. Tubercular meningitis and other forms due to miliary dissemination of tubercle bacilli, are almost uniformly fatal, while well-developed tuberculosis of any part of the body is usually so.

For treatment, etc., see CONSUMPTION or PHTHISIS: SCROFULA: GERM THEORY: HIP JOINT DISEASE: POTT'S DISEASE: ETC.

TUBEROSE, a. *tū'ber-ōs*, or TU'BEROUS, a. *-ūs* [L. *tūber*, a protuberance, a hump]: having knobs or tubers; connected into a bunch by rootlets, as in the potato. TU'BEROUSNESS, n. *-nēs*, state of being tuberous. TU'BEROS'ITY, n. *-ōs'ī-tī*, in *anat.*, a kind of projection or elevation; the state of being knobbed. TUBEROSE, n. *tūb'rōz* or *tū'ber-ōs*, a highly odoriferous flowering plant of the genus *Polianthes*, nat. order *Liliaceæ*, having a funnel-shaped perianth, with 6-parted limb, stamens inserted in the tube of the corolla, a superior capsule, and flat seeds. The COMMON T. (*P. tuberosa*), native of Ceylon, has rounded bulbous roots; a cylindrical, upright, unbranched stem, three or four ft. high; both root-leaves and stem-leaves sword-shaped, and very acute; flowers spiked and somewhat aggregated, large, pure white, the tube a little curved. The plant grows well in the south, but bears the open air in more northern climates only during summer. In the n. United States it is a greenhouse plant. The roots are a considerable article of export from the s. to the n. of Europe; the plant being in high esteem for the beauty and fragrance of its flowers, whose odor is most powerful after sunset, and has been known to cause headache and asphyxia in a room. The fading flowers emit, in certain states of the atmosphere, an electric light and sparks. The flowers yield an essential oil used by perfumers; more than a ton of flowers for this purpose are yearly raised in the Var valley, France. Another species, *P. gracilis*, is said to be found in Brazil. The T. has been known in Europe about three centuries.

TUBE-WELL: contrivance for obtaining a moderate supply of water in a very short time by application of a limited amount of manual power. The apparatus—invented in the United States—comprises three parts—a tube or well, a rammer or monkey, and a pump. The tube consists of an iron pipe about $1\frac{1}{4}$ inch diameter, made in pieces of convenient length, which can be screwed together end to end. The pipe terminates at the lower end with a solid tempered steel point, and is perforated for about 16 inches

TUBICOLÆ—TUBICOLIDÆ.

from the end with small lateral apertures. The pipe is driven into the ground far enough to keep it upright without falling, and is temporarily kept in that position by hand. A strong iron clamp is fixed to the tube by clamping-screws at a short distance above the ground; and another clamp is similarly fixed higher up. Two pulleys are supported by the upper clamp. The rammer or monkey consists of a 56-lb. iron weight, which slides up and down the tube, encircling it like a ring or belt. The rammer, being raised by two men, is allowed to fall with its full weight on the lower clamp, thus giving a series of blows which drive the tube into the ground. When the lower clamp becomes level with the surface of the ground, it is raised up the tube; as is likewise the other clamp, which supports the two pulleys. Successive lengths of tube and successive shiftings of the clamps afford the means of enabling the pointed and perforated end of the tube to be driven down to a depth whence water can be obtained. When the symptoms of water being reached appear, a small suction-pump is applied, and the water pumped up. It is only when water is expected to be reached at a moderate distance below the surface that this apparatus is available, as it is not powerful enough for very great depths, nor is the bore of the tube sufficient for a large influx of water; but where the required conditions exist, the apparatus saves a great amount of time and expense in sinking a well. As the water is pumped up, the loose sand and gravel disappear from the point of the tube, allowing the formation of a small pool or well around its lower end; while small pebbles which collect around the perforations act as a sort of filter. The tube can be extracted from the ground by forcing the rammer upward against the upper clamp. Tube-wells have been sunk to a depth of 10 ft. in 22 minutes—obtaining water; and water had been reached in even less time. One was sunk to a depth of 150 ft. in Ithaca, N. Y. This form of well has less liability than other forms to receive dirty surface-water; and no accident is possible from foul air or from the falling in of the sides. Tube-wells have been sent out with troops on military expeditions.

TUBICOLÆ, n. plu. *tû-bîk'ô-lê* [L. *tubus*, a tube; *colo*, I inhabit]: order of *Annelida* (q.v.), having a tubular shelly covering, into which the animal can entirely retreat, but from which, when undisturbed and disposed to activity, it projects its head and gill-tufts. The genus *Serpula* (q.v.) is a good example. TUBIC'OLOUS, a. *-ô-lûs*, inhabiting a tube. TUBIC'OLAR, a. *-ô-lér*, pertaining to the Tubicolæ.

TUBICOLIDÆ, *tû-bî-kôl'î-dê*, or GASTROCHÆNIDÆ, *gâs-trô-kê'nî-dê*: family of lamellibranchiate mollusks, remarkable for the calcareous tube into which the proper shell is cemented: for examples, see ASPERGILLUM: CLAVAGELLA: GASTROCHÆNA. The *Pholadidæ*, including *Pholas* (q.v.) and *Teredo* (q.v.), are included by some in this family. *Teredo* has the characteristic tube, but *Pholas* has not.

TUBICORNOUS—TUBINGEN-THEOLOGY.

TUBICORNOUS, a *tū'bi-kör'nūs* [L. *tubus*, a pipe; *cornu*, a horn]: having hollow horns; composed of a horny axis, covered with a horny sheath, as in the 'TU'BICORNS, -*körnz*, a family of ruminants.

TÜBINGEN, *tü'bīng-en*: important town of Württemberg, circle of the Black Forest; 20 m. s.s.w. of Stuttgart, on the Neckar, at the influx of the Steinlach. T., which is in one of the most beautiful and fertile districts of the Oberland, is an old place, irregularly built, with steep, narrow streets; but the suburbs, especially around the new university, are very pleasant. W. from T. is the Schloss, built by Duke Ulrich, 1535. Book-printing, book-selling, working in copper, weaving, bleaching, trading in field-produce, wine, and fruits, are principal industries. T. has three Prot. churches and one Rom. Cath. church, a chamber of manufactures, a Bible Soc., and various educational and benevolent institutions. But it owes its celebrity wholly to its university. Founded 1477 by Eberhard im Bart, afterward first Duke of Württemberg, the Univ. of T. soon became a distinguished seat of learning, was favored for a time with the presence of Reuchlin (q.v.) and Melancthon (q.v.), and continued to flourish long after the Reformation had firmly established itself. The univ. adopted the Reformed faith 1534, and received 1536 the addition of a Prot. theol. seminary: a Rom. Cath. theol. faculty, the 'Convict,' was added. The Thirty Years' War (q.v.) was an almost fatal check to its prosperity; and it was not till the early part of the 19th c. that it began to regain reputation. Under Baur (q.v.), it became celebrated as a school of historico-philosophical theology, known as the 'Tübingen School,' whose influence on the development of religious thought was for a time very great, but has now nearly ceased, having given place to new lines of criticism. The univ. has 6 faculties, more than 100 professors and teachers, a library of 200,000 vols. (in Duke Ulrich's *Schloss*); and is attended annually by 1,300 to 1,500 students, of whom between 700 and 800 are foreigners, many from the U. S. Connected with it are an anatomical and physical institute, a botanical garden, a chemical laboratory, a collection of zoology and comparative anatomy, one of minerals, one of coins and antiquities, fencing, gymnastic, and swimming schools, etc.—Pop. of T. (1880) 11,708; (1885) 16,660; (1900) 15,338.

TU'BINGEN SCHOOL: name given to two widely different schools of theology—the Old T. School and the Modern T. School, whose chief representatives were connected with the University of Tübingen, Germany. The Old School, essentially orthodox, was founded by Gottlob Christian Storr, prof. of theology.

TÜBINGEN-THEOLOGY: the theological teachings prominent in the Univ. of Tübingen under the lead of Ferdinand C. Baur (q.v.); though it is a term of wide and varied meaning, sometimes expressing little more than Paulinism, at others extreme rationalism.

TUBIPORE—TUBULAR BRIDGE.

TUBIPORE, n. *tū'bi-pōr* [L. *tubus*, a pipe; *porus*, a passage]: one of a genus of coral zoophytes; organ-pipe coral.

TUBULAR, a. *tū'bū-lēr* [L. *tubūlus*, a small pipe or tube—from *tubus*, a pipe: It. *tubulo*]: having the form of a tube or pipe; consisting of a tube or pipe. **TUBULAR BOILER**, a boiler made up or consisting of tubes. **TUBULAR BRIDGE**, a bridge consisting of a great iron tube through which a roadway passes (see below). **TU'BULATE**, a. *-lāt*, or **TU'BULATED**, a. *-lā-tēd*, made in the form of a tube or pipe; furnished with a small tube or tubular opening. **TU'BULE**, n. *-būl*, a small pipe or tubular body. **TUBULIFORM**, a. *tū-bū'li-fōrm* [L. *forma*, a shape]: having the form of a tube or tubule. **TUBULOUS**, a. *tū'bū-lūs*, resembling a tube; fistular; composed of tubes; in *bot.*, composed of tubular florets; having a bell-shaped mouth or border, somewhat tubular in its form.

TUBULAR BRIDGE: tube used as a bridge. The advantages of the tube for carrying a level roadway across a large span were brought into general notice by Robert Stephenson, engineer of the Chester and Holyhead railway, in constructing the bridges for that railway across the Menai Strait (q.v.). It was required by the admiralty that these bridges, the Britannia and the Conway, should be constructed, so as not to interfere with the navigation, with clear spans of more than 400 ft. The largest arched spans previously constructed did not exceed 240 ft.; and suspension-bridges not being then deemed suitable for heavy and rapid railway traffic, the engineer was obliged to devise some new form. Stephenson, having selected the tubular form, proceeded, in conjunction with Fairbairn, to make elaborate experiments on wrought-iron tubes, to determine the most suitable arrangement of their materials. They found that a rectangular tube, of which the top and bottom were cellular (see **STRENGTH OF MATERIALS**), gave greatest strength with least material. The span of the Conway tube was 400 ft.; while the tubular part of the Britannia Bridge consisted of two spans of 460 ft., and two of 230 ft. each in the clear. The foundation-stones of these bridges were laid 1846 and 1847 respectively: see **BRITANNIA TUBULAR BRIDGE**. Since that time, many important bridges have been constructed on this principle. One of the grandest is the Victoria Bridge, over the St. Lawrence, near Montreal, in Canada. The total length of this bridge is 9,144 ft., or nearly $1\frac{3}{4}$ m. It is in 24 spans, of 242 to 247 ft. each, and one span of 330 ft. The greatest depth of the river is 22 ft., and the average rate of the current 7 m. per hour. The bottom of the centre tube is 60 ft., and at the abutments the bottom is 36 ft. above the water, so that there is a rise of 1 in 130 in the roadway toward the centre of the bridge. In the tubes, 9,000 tons of iron were used, and $1\frac{1}{2}$ million of rivets; total surface of iron was 32 acres; and as it received 4 coats of paint, the total painting was 128 acres. There were 2,713,095 cubic ft. of masonry; and 2,280,000 cubic ft. of timber in the temporary works, dams, etc.; and more than 3,000 men were employed. The first stone was laid 1854, July

TUBULIBRANCHIATA—TUCKAHOE.

20, and the first train passed over 1859, Dec. 17. The total cost was about \$7,000,000.

Notwithstanding the success of these structures, the T. B. has now been largely superseded by the lattice or trellis, on account of the great saving in the material of which the sides are composed, effected by using open lattice-work instead of the solid plated side of the tube. By this lattice arrangement, the material is more capable of arrangement in the direct line of the strains; and the section of the lattice bars can be accommodated to the strain so that there shall be no material which is not carrying its due share of the load. The first large lattice structure of this nature was the Boyne Viaduct, on the Dublin and Belfast Junction railway. Besides the considerable saving in material, the facilities of the lattice form for repairs and painting, and the exposure of a smaller surface to the wind, are reasons for its preference: see LATTICE-BRIDGE: BRIDGE.

TUBULIBRANCHIATA, *tū-bū-lī-brāng-kī-ā'ta*: order of gasteropodous mollusks, having two branchiæ behind the heart, the whole animal inclosed in a long shelly tube, which is sometimes straight, sometimes twisted in an irregular spiral.

TUCK, *v. tŭk* [Ger. *zucken*, to draw in, to shrug: Low Ger. *tukken*, to shrug the shoulders: a variant of *Tug*, which see]: to turn or gather up; to draw into a narrower compass; to press in or together, as the bedclothes: N. a horizontal plait or fold made in a garment to shorten it; a kind of net; *familiarly*, anything good to eat; eatables. **TUCK'ING**, imp. **TUCKED**, pp. *tŭkt*. **TUCKER**, *n. tŭk'kēr*, a fold of cloth for shading the bosom of a woman, above the top of the bodice; an ornamental fold to a woman's dress. To **TUCK IN**, *familiarly*, to eat heartily; to devour.

TUCK, *n. tŭk* [perhaps from F. *estoc*, a rapier, stock of a tree (see **STOCK**): but comp. W. *twca*, a sort of knife; *twc*, a cut]: in *OE.*, a long narrow sword; a rapier.

TUCK, *n. tŭk* [contr. from *tucket*]: sound or beat, as 'tuck of drum.'

TUCK, *tŭk*, **JOSEPH HENRY**: inventor: b. Dorchester, Mass., 1812, Mar. 12. He graduated at the Boston High School; became a watch-maker and candle-manufacturer; and was employed in England as a civil engineer 1837-65. He organized the company that laid the submarine cable between Dover and Calais 1848-9; drew the plans for excavating the Suez canal; took out 55 patents in various countries for mechanical inventions and improvements; and engaged in real-estate operations in Brooklyn 1869.

TUCKAHOE, *n. tŭk'kă-hō* [an Amer. Indian word, signifying bread]: a curious tuberous, vegetable-like production of unknown origin, found in several parts of the United States, growing under the surface of the ground like the truffle of Europe, and sometimes called *Indian bread*. It is not to be classed with the fungi. It is almost entirely of *pectin*, and has no cellular structure. In some places it is used like arrowroot, as an article of diet.

TUCKER.

TUCKER, *tūk'ér*, ABRAHAM: English author whose reputation falls short of his merits: 1705, Sept. 2—1774, Nov. 20; b. London; of good family. He studied at Mer-ton College, Oxford, and 1726 became a member of the Inner Temple. T. inherited a large fortune from his father; and 1727 purchased Betchworth Castle and estate, near Dorking, Surrey. Having all the ease and quiet happiness of an English gentleman of the 18th c., he had also a frank, generous nature and a sincere love of intel-lectual pursuits, which prevented his misuse of his advan-tages. He was an industrious student, a man of keen observation, of much innocent and cheerful humor, and of methodical business habits. T.'s great work is *The Light of Nature Pursued*: it was begun 1756, and formed the chief literary occupation of his life. It extended to seven vols., of which four were pub. during his life, under the pseudonym Edward Search. It is not a systematic treatise, but consists of a series of disquisitions on meta-physics, theology, morals, etc., all showing remarkable originality, simplicity of humor, ingenuity of illustration, and solidity of understanding. In his intellectual philos-ophy he professed to follow Locke. Paley, in his discus-sion of utilitarianism, acknowledged his obligations to T. The standard ed. is edited by the author's grandson, Sir Henry Mildmay.

TUCKER, *tūk'ér*, JOSIAH, D.D.: 1711-1799, Nov. 4; b. Laugharne, Wales: Anglican clergyman. He was edu-cated at Oxford; became rector of St. Stephen's, Bristol, 1749, prebendary of Bristol 1756, and dean of Gloucester 1758; and greatly aided the patriot cause by openly advocating the peaceful separation of the Amer. colonies from England, and by publications setting forth the real state of political affairs in America.

TUCK'ER, ST. GEORGE, LL.D.: 1752, June 29—1828, Nov. 10; b. Port Royal, Bermuda: jurist. He removed to Va. to complete his education 1771; graduated at William and Mary College 1772; studied law and began practicing in Va.; took part in the expedition against Bermuda 1776; commanded a patriot regt. at Yorktown; and married the mother of John Randolph. He was a judge in the Va. state courts nearly 50 years; judge of the court of appeals 1803-11, and of the U. S. dist. court of e. V. 1813-27; prof. in William and Mary College; and commissioner to revise the state laws.

TUCK'ER, SAMUEL: 1747, Nov. 1—1833, Mar. 10; b. Marblehead, Mass.: naval officer. He was bred to the sea, commanded a Boston and London merchantman when 21 years old, and was commissioned capt. in the American navy 1776, Jan. 20. That year with the armed schooners *Franklin* and *Hancock* he captured more than thirty prizes; 1777 became commander of the frigate *Boston*; 1778 took out John Adams, minister to France; and returning 1779 captured 5 prizes and the Brit. frigate *Pole*, and convoyed a fleet of merchantmen from the W. Indies to Philadelphia. He was captured while aiding the defense of Charleston

TUCKER—TUCSON.

1780; paroled 1781; resumed command of his vessel and captured 7 prizes; was again captured, but escaped; and after the war received the thanks of congress. In 1813 he captured a Brit. privateer with valuable stores off the Me. coast.

TUCK'ER, WILLIAM JEWETT, D.D.: clergyman: b. Griswold, Conn., 1839, July 13. He graduated at Dartmouth College 1861, and at Andover Theol. Seminary 1866; was pastor of a Congl. church in Manchester, N. H., 1867-75, and of the Madison Square Presb. Church, New York, 1875-79; was prof. of sacred rhetoric at Andover Theol. Seminary, 1879-92; and was elected pres. of Dartmouth College, 1892. He received his degree from Dartmouth, 1875, and became one of the editors of *The Andover Review* 1884.

TUCKERMAN, tŭk'ēr-man, HENRY THEODORE: author: 1813, Apr. 20—1871, Dec. 17; b. Boston, Mass. He visited Italy 1833, and on his return home published *The Italian Sketch-book* (1835): he spent 1837-39 in Europe, again visiting Italy and Sicily, and there writing *Isabel, or Sicily: a Pilgrimage*. He now began to contribute to magazines sketches, essays, and literary and art criticisms: most of these he later collected and published in volumes. He wrote 2 vols. of poems and several biographies. One of his earlier works, *Thoughts on the Poets* (1846), was translated into German by Dr. Emil Müller, and pub. at Marburg 1856. His vol. *Mental Portraits* (London 1853) was revised and enlarged 1857 and then named *Essays Biographical and Critical or Studies of Character*.

TUCKET, n. tŭk'ēt [It. *toccata*, a prelude—from *toccare*, to touch (see TOUCH)]: in *OE.*, a kind of flourish or prelude on a trumpet. **TUCKET-SONANCE, -sō'nāns**, in *OE.*, the sound of the tucket.

TUCKING-MILL, n. tŭk'ing-mīl [W. *tew*; Gael. *tiugh*, thick]: a fulling-mill for thickening cloth.

TUCSON, tŭ'sŏn or tŭk'sŏn: city, cap. of Pima co., Ariz.; on Santa Cruz river, and on the Southern Pacific railroad; 250 m. e. of Yuma. It is in an agricultural, stock-raising, and mining region; has a large business in reduction of gold, silver, and copper ores; and ships gold-dust, hides, and wool, in considerable quantities. It contains the most costly court-house in the terr., new public-school building (cost \$50,000), city hall, public library, opera-house, several hotels, handsome Bapt., Congl., Meth. Episc., and Rom. Cath. churches; Univ. of Ariz., Institute of St. Joseph, Rom. Cath. convent and hospital: water, ice, and gas works; 2 national banks (cap. \$100,000), U. S. depository; and 2 daily and 3 weekly newspapers. An extensive system of irrigating-works has been provided in the outlying region.—T. was founded by the Jesuits 1560, and was the cap. of the terr. 1867-77.—Pop. (1880) 7,007; (1890) 5,150; (1900) 7,531.

TUCUMAN—TUDOR.

TUCUMAN, SAN MIGUEL DE, *sán me-ghěll' dū tó-kô-nán'*: town of the Argentine Confederation, cap. of prov. of T.; about 120 m. n.w. of Santiago. T. has a cathedral, convents, and a Jesuits' college. It is connected by rail with Cordova and Rosario; it manufactures sugar, leather, and brandy, and has active trade in oxen and mules. Here, 1816, a congress of deputies from the various Argentine provinces proclaimed their independence of Spain.—Pop. (1901) 50,000; of prov. (1900) 249,433.

TU'CUM AND TU'CUMA PALMS: see **ASTROCARYUM.**

TUDELA, tó-thū' lá (*Tutela* of the Romans): city of Spain, prov. of Navarra; on the left bank of the Ebro (here crossed by a bridge of 17 arches); 46 m. by rail n.w. of Saragossa. It is a dull, gloomy-looking place, with narrow streets and lofty houses; but the promenades along the river are very fine, as are also the *plazas*, or public squares. T. is the seat of a bp.; has a Gothic cathedral, a medical college, and manufactures of coarse woolen cloths, soap, earthenware, etc.; and has active trade in the products of the district.—Pop. about 10,000.

TUDOR, tū'dér: family of Welsh extraction, which occupied the throne of England 1485–1603. In the Welsh language, T. is the equivalent of Theodore. Owen T., first of the race known in history, is said to have descended from the ancient Welsh princes; but little is known of his origin, except that his father had to quit Wales on a charge of murder, and was outlawed. Owen T. himself seems to have been a brewer at Beaumaris, in Anglesey; afterward a retainer in the suite of the bp. of Bangor; and to have fought at Agincourt. His dancing at a court pageant is said to have ingratiated him with Catharine of Valois, widow of Henry V., who appointed him clerk of the household. His relations with Catharine roused public indignation, and the queen was compelled to take refuge in a convent at Bermondsey, where she died. T. was sent to Newgate, but succeeded in escaping and obtaining two audiences of the young king, Henry VI., who afforded him protection and conferred on him the lieutenancy of Denbigh. Two sons had been born to him by the queen. On the elder, Edmund, the king bestowed the earldom of Richmond; and on the younger, Jasper, the earldom of Pembroke. The Earl of Richmond married Margaret, daughter and heiress of John Beaufort, Earl of Somerset, whose father was an illegitimate son of John of Gaunt by Katherine Swynford. Henry, Duke of Richmond—sole issue of Richmond and the heiress of Somerset—having been invited from abroad to deliver England from Richard III., ascended the throne after Richard's death at Bosworth, as Henry VII. The partizans of the House of Lancaster supported him on the extinction of the lawful descendants of John of Gaunt; and by his marriage with Elizabeth, eldest daughter of Edward IV., and representative of the House of York, he was considered to have united the factions of the White and Red Rose. Five sovereigns of the House of T. successively occupied the throne—Henry VII., Henry VIII.,

TUDOR.

Edward VI., Mary, and Elizabeth (see these titles). From Elizabeth, the last of the line, the crown passed to James VI. of Scotland, of the House of Stuart (q.v.), in virtue of his descent from Margaret T., daughter of Henry VII. and queen of James IV. of Scotland. Strength of will was the prominent characteristic of the sovereigns of the House of T.; their rule, generally prosperous, was far more arbitrary and despotic than that of the Plantagenets. Parliament was in many cases but the exponent of the royal will, and taxes were frequently exacted, and penal statutes dispensed with, by the prerogative alone. The condition of England under the Tudors differed from despotic monarchies chiefly in the important respect that the sovereign had no standing army. The T. monarchs exercised a remarkable influence on ecclesiastical affairs: under their rule the Reformation took place, and the Anglican Church was developed.



Tudor Architecture, Hengrave Hall, Essex, 1538.

TUDOR, *tū'der*, WILLIAM: 1750, Mar. 28—1819, July 8; b. Boston: lawyer. He graduated at Harvard 1769; was admitted to the bar 1772; was judge-advocate on Washington's staff 1775-78; member of both houses of the Mass. legislature; sec. of state 1809-10; a founder of the Mass. Historical Soc.; and vice-pres. of the Mass. Soc. of the Cincinnati.

TU'DOR, WILLIAM: author: 1779, Jan. 28—1830, Mar. 9; b. Boston; son of William T. (1750-1819). He graduated at Harvard 1796; engaged in mercantile business; made several trips to Europe; spent some time in literary pursuits in France and Italy; and, returning to Boston, founded the Anthology Club, and was principal writer on its organ, *The Monthly Anthology*, 1803-11. He was also a founder of the Boston Athenæum, projector and first editor of *The North American Review*, and originator of the Bunker Hill monument. In 1823-27 he was U. S. consul at

TUDOR STYLE—TUFTS COLLEGE.

Lima, and from 1827 till his death U. S. chargé d'affaires at Rio Janeiro. He published several works and left much MS.

TU'DOR STYLE: in *arch.*, indefinite term applied to the late Perpendicular and the transition from that to Elizabethan.

TUEDIAN, a. *tū-ē'dī-an*: of or belonging to the region adjacent to the Tweed.

TUESDAY, n. *tūz'dā* [AS. *tywes-dæg*, Tuesday—from *Tywo*, the god of war; *dæg*, day: in Scand. myth., *Tuisco*, the god of war: Icel. *tysdagr*: Sw. *tisdag*: Dan. *tirsdag*]: the third day of the week (see WEEK).

TUFA, n. *tū'fā*, or **TUFF**, n. *tŭf* [It. *tufa*, soft sandy stone—from L. *tofus*, tufa: Sp. *toba*: F. *tuf*]: originally a light porous rock composed of cemented scoriæ and ashes ejected from a volcano; now any porous vesicular compound. **TUFACEOUS**, a. *tū-fū'shŭs*, pertaining to or consisting of tufa, or resembling it.

TUFT, n. *tŭft* [F. *touffe*, a tuft, clump of trees: Ger. *zopf*, a tuft of hair: Icel. *toppr*, the summit, tuft of hair: W. *twb*, a round lump; *twff*, a tuft (see also TOP 1)]: a collection of small things forming a knot or bunch, as of threads or feathers; a clump; a cluster; a head of flowers; a little bundle of leaves, hairs, or the like: V. to adorn with a tuft or with tufts. **TUFTING**, imp. — **TUFT'ED**, pp.: **ADJ.** growing in tufts or clusters; adorned with a tuft or tufts. **TUFTY**, a. *tŭf'tī*, abounding with tufts; growing in clusters. **TUFT-HUNTER**, one who is very assiduous in courting the acquaintance of persons of rank—the phrase originating from the circumstance of young noblemen being entitled to wear gold tassels in their caps at Oxford University.

TUFTS, *tŭfts*, **COTTON**: 1734, May 30–1815, Dec. 8; b. Medford, Mass.: physician. He graduated at Harvard 1749; studied medicine, and settled in Weymouth to practice; was an original member of the State Medical Soc., and a founder of the Acad. of Arts and Sciences; became a member of the general court, state councilor, state senator, and member of the convention that ratified the federal constitution; and was author of the instructions to the representatives of Weymouth to oppose the Stamp Act.

TUFTS COLLEGE: educational institution at College Hill, Medford, Mass.: it is controlled by the Universalist churches of the United States. T. C. was chartered by the legislature of Mass. 1852, and was opened for reception of students 1855. In 1901–2 it had 150 professors and instructors. The value of grounds and buildings was \$150,000; productive funds \$1,900,000, total income \$149,000; vols. in library 50,000 valued at \$200,000; scientific apparatus valued at \$50,000, and benefactions \$80,000. The theol. school of T. C. was opened 1869; it had (1901) 11 resident professors and instructors, 19 students, 8 graduates, and its grounds and buildings were valued at \$60,000. Its president is Charles H. Leonard, D.D. The Rev. Elmer Hewett Capen, D.D., is president of the college. There are several scholarship funds of \$2,000 each. The Rev. Dr. A. A. Minor made a

gift of \$40,000 to T. C. (1891) for a building to be used for the theol. school. The gifts of Phineas T. Barnum to T. C. during his life amounted to \$100,000; by his last testament he bequeathed \$40,000 to be applied to the Barnum Museum of Nat. History in the college.

TUG, n. *tŭg* [Ger. *zug*, a pull, a tug; Icel. *tog*, a tow-rope; O. Dut. *tucken*, to allure, to entice; AS. *teon*; Ger. *ziehen*; Goth. *tiuhan*, to draw (see also TUCK 1)]: a pull with strong effort; a small steam-vessel used to tow or pull ships out of or into a harbor or dock; something used in tugging or pulling; one of the straps or chains by which a horse draws a vehicle; a trace: V. to pull or draw with considerable effort; to pull with continued exertion; to labor hard; to drag. TUG'GING, imp.: N. laborious pulling. TUGGED, pp. *tŭgd*. TUG'GINGLY, ad. *-lĭ*. TUG'GER, n. *-gĕr*, one who tugs. THE TUG OF WAR, the supreme effort in any struggle; also, a game in which the ends of a rope are held by rival parties who try to draw each other over a line.

TUILERIES, *tŭ-ĕl-rĕ'*, PALACE AND GARDENS OF THE: buildings and pleasure-grounds in the middle of Paris, on the right bank of the Seine, with Rue de Rivoli along their n. side, and Quai des Tuileries to the s. Here, 1342, a certain Pierre des Essarts possessed a pleasure-house, called the *Hôtel des Tuileries* from its being built in a locality where were several tile-works (*tuileries*). Francis I. bought this property from the Sieur de Villeroy, as a present to his mother, the Duchess of Angoulême. It was afterward chosen by Catharine de' Medici as the site of a new palace instead of that of Tournelles, and the building was begun 1566. Originally, the palace consisted of only the square structure in the centre; but was greatly enlarged by Henry IV., Louis XIII. and XIV., and Napoleon I.; and received further improvements at the hands of Napoleon III. Louis XIII. was the first sovereign who resided at the T. Louis XIV. stayed there for only a short time, and then established himself at St. Germain; Louis XV. and XVI. lived at Versailles. In 1793 the national convention held its sittings in the T.; and Bonaparte chose it for his official residence. It was occupied by Louis Philippe, was the imperial residence of Napoleon III., and was burned by the Commune 1871. The side-wings have been restored.

TUILYIE, or TUILZIE, or TULYE, n. *tŭl'yĕ* [OF. *touiller*, to mix in a confused manner]: in *Scot.*, a quarrel; a broil: V. to quarrel; to squabble.

TUITION, n. *tŭ-ĭsh'ŭn* [L. *tuitiō* or *tuitiōnem*, a taking care of, a guarding—from *tuĕor*, I look at or guard]: *originally*, superintending care, as over a pupil or ward—hence, instruction; the act or business of teaching. TUITIONARY, a. *-ĕr-ĭ*, pertaining to tuition.

TUCE, *tŭk*, WILLIAM: philanthropist: 1732-1822, June 6; b. York, England. He founded a retreat for insane persons at York—the first asylum in England in which humanitarian and scientific principles were applied in the treatment of mental disorders. T. made a bold de-

TULA—TULIP.

parture in his treatment of the insane without excessive restraint, and in discarding copious bleedings and depressing medicines for their malady. He was a member of the Soc. of Friends, which soc. also controlled the York Retreat.

TU'LA: see TOULA.

TU'LA-METAL: peculiar alloy of silver, with small proportions of copper and lead; manufactured at the imperial metal-works at Tula, or Toula, in Russia, and used for making the famous Russian snuff-boxes, erroneously said to be of platinum.

TULANE, *tû-sân'*, PAUL: philanthropist: 1801, May—1887, Mar. 27; b. near Princeton, N. J. He settled in New Orleans as a merchant 1822, and was in active business till 1856, when he retired from commercial life, possessed of a considerable fortune. He changed his residence to Princeton, N. J., 1873, still retaining a warm regard for New Orleans. He conveyed his estate there 1882 to trustees for the foundation of an educational institution. This and subsequent gifts amounted to about \$1,100,000. The institution thus founded is the T. University, founded 1884, and having (1889) 42 professors and instructors, and 782 students in all depts., of whom 500 were boys and 282 girls. T. in his life often expressed the purpose of bequeathing much of his residuary estate to the univ. trustees, but he died intestate, and the property went to his heirs-at-law.

TULCHAN, n. *tûl'chân*, the *ch*, as in *loch*, is guttural [Gael. *tulachan*, a sham calf or bishop]: in *Scot.*, an undressed calf's skin stuffed with straw, and set beside a cow to cause her to give her milk. A TULCHAN BISHOP, in *Scot.*, in Reformation times, one who received the episcopate on condition of assigning the temporalities of the see to a secular person.

TULIP, n. *tû'lîp* [F. *tulipe*; It. *tulipa*, a tulip—from Pers. *dulband*, a turban—from its likeness to a turban]: a bulbous plant cultivated for the beauty and variety of its flowers, of the genus *Tulipa*, ord. *Liliacæ*; the tulip of the gardens is *Tulipa Gesneriāna*.—The *Tulip* has an inferior bell-shaped perianth, of six distinct segments, without neetaries; a sessile three-lobed stigma, a three-cornered capsule, and flat seeds. The bulb is fleshy, and covered with a brown skin. About 30 species of T. are known, mostly natives of warmer parts of Asia. The most famous of all Florists' Flowers is the GARDEN T. (*T. Gesneriāna*), 18 in. to 3 ft. high, with smooth stem, bearing one erect, large flower; the leaves ovate-lanceolate, glaucous, and smooth. The T. is a native of the Levant; was brought from Constantinople to Augsburg by Conrad Gesner 1559, and was rapidly diffused throughout Europe. The varietie in cultivation in Europe and America are innumerable. For the tulip mania of the 17th c., in Holland, see FLORISTS' FLOWERS. The T. is still sedulously cultivated in Holland, especially at Haarlem, whence bulbs are largely exported. It is prized merely for the size and beauty of its flowers; its odor being not very pleasant. Tulips succeed best in a light, dry, and somewhat sandy soil. Bulbs

TULIP-TREE.

are planted in the end of Oct. or beginning of Nov., and the flowers are produced early in summer. Tulips are propagated by offset bulbs, and new varieties are raised from seed.—Another species of *T.* cultivated in gardens is the SWEET-SCENTED *T.*, or VAN THOL *T.* (*T. suaveolens*), which has a short, hairy stem, and yellow or red flowers, inferior to those of the common Garden *T.* in beauty, but prized for fragrance and for appearing more early in the season: it is cultivated often in pots in windows. It is a native of s. Europe. The WILD *T.* (*T. sylvestris*) is a native of many parts of Europe and Asia: it is common in the woods and vineyards of Germany and s. Europe. It has a slender stem, narrow lanceolate leaves, and a somewhat drooping, fragrant, yellow flower. It develops offset bulbs at the end of fibres thrown out from the root, at some distance from the parent plant. Its bulbs are eaten in Siberia, though bitterness and acridity characterize the bulbs of this genus.

TU'LIP-TREE (*Liriodendron tulipifera*): beautiful tree of nat. ord. *Magnoliaceæ*, native of the United States; having a stem sometimes 100–200 ft. high and 9 ft. thick in the w. states. The leaves are roundish, ovate, with two lobes near the base and two at the apex, truncate, with a broad shallow notch between. The flowers are solitary at the extremities of the branchlets; they resemble tulips in size and appearance, and are greenish yellow, marked with orange. The scale-like pistils cohere in a cone, separating when ripe, and falling away like the key-seeds of the maple. The bark has a bitter, aromatic taste, and, like that of all the *Magnoliaceæ*, contains a bitter principle, *Liriodendrin*. It has been used as a substitute for Peruvian Bark



Tulip-tree (*Liriodendron tulipifera*).

in intermittent fevers, and is a good tonic. The T.-T. is found from s. New England to Ill. and south. It is one of the most beautiful ornaments of pleasure-grounds, wherever it grows and flowers well. It is now plentiful in many parts of s. Europe. In some parts of the basin of the Mississippi, it forms considerable tracts of the forest. The heart-wood is yellow, the sap-wood white. The timber is easily wrought, takes good polish, and is much used for many purposes.

TULLAMORE—TULLOCH.

TULLAMORE, *tŭl-lu-mŏr'*: one of the capitals, and now the assize town, of Kings county, Ireland; on the Grand canal, 59 m. w.s.w. of Dublin, with which it is connected by rail. It stands on what may be called a fertile island of the great Bog of Allen (q.v.), and has within recent years risen into importance. Its central position gives it command of the inland traffic of a large district. A trade in grain and agricultural produce is carried on with Dublin by the canal. There are a large distillery and extensive breweries and several tanneries; also a busy cattle-trade. The schools, conventual and national, are excellent, and numerous attended. There are a jail and courthouse, barracks, Rom. Cath. and Prot. churches, etc. A weekly newspaper is published. Within a few miles is the extensive Jesuit college of Tullabeg, which receives above 150 pupils.—Pop. (1891) 4,522, mostly Rom. Catholics.

TULLE, n. *tól* [F. *tulle*—said to be so called from the town of *Tulle*, in France]: a delicate kind of silk net or lace, used for women's veils, for dressing caps, etc.

TULLE, *tŭl*: town of France, dept. of Corrèze; at the embouchure of the Solane into the Corrèze. It is for the most part poorly built, but has some fine promenades, excellent quays and bridges, Gothic cathedral, episcopal palace, theological seminary, communal college, industrial college, public library, and theatre. One of the suburbs of T., called Souillac, is a national milit. manufactory, and the town is otherwise notable for manufactures of leather, paper, cards, lace (known as *Point de Tulle*), liqueurs, and iron-mongery. Some say that T. owed its origin to a Roman fort called *Tutela*; and in the vicinity are certain undoubted Roman remains: others think it dates from the 4th c.—Pop. (1891) 18,964.

TULLOCH, *tŭl'ok*, JOHN, D.D.: 1823–1886, Feb. 13; educator and author: b. at Bridge of Earn, Perthshire, Scotland. He was educated at the Univ. of St. Andrews; was ordained a clergyman of the Church of Scotland (Presb.) 1845; studied philosophy and speculative theology in Germany; became parish clergyman at Kettins, Scotland, 1849; and from 1854 till his death was prof. of divinity and principal of St. Mary's College, St. Andrews. He visited the United States 1874.—T. was author of many works, including *Leaders of the Reformation*, *English Puritanism and Its Leaders*, and *Rational Theology and Christian Philosophy of the Seventh Century*. The last is his most important work. His writings are valuable especially for their sketches of leaders in the great movements in the church—such as the Reformation and Puritanism. Next to Dr. Robert Lee, T. has done more than any other man to broaden the Scottish national church—insisting on the necessity of comprehensiveness of varying evangelical opinions and tendencies; and on liberty in all subscriptions to creeds, as binding not in all details but only as to general substance and spirit. The evident need of this provisional step in the direction of liberty has since indicated to many minds the fact that creeds cannot be relied on as the sure defense of doctrine.

TULLUS HOSTILIUS—TUMEFY.

TULLUS HOSTILIUS, *tŭl'ŭs hŏs-tĭl'ĭ-ŭs*: third legendary king of Rome: d. B.C. 638 (reigned B.C. 670–638). According to the legends (doubtful authority for dates, events, etc.), he succeeded Numa Pompilius on the throne; and made the famous arrangement, by the combat of the Horatii with the Curiatii, for decision of the question of supremacy between Rome and Alba, which resulted in favor of Rome: he conquered Fidenæ and Veii; destroyed Alba, and removed the inhabitants to Rome, giving them Mount Cælius to dwell on; and carried on war against the Sabines. As he grew old, he became more pacific, and turned to the worship of the gods; but his negligence had too long provoked them to be forgiven; so that, when he wished to inquire of Jupiter Elicius, the god consumed T. H. and his house with fire.—According to Niebuhr, Arnold, etc., glimpses of a distinct personality appear in this legend of T. H., by which it makes nearer approach to history than do the legends of Romulus and Numa, which are merely personifications of the two principal stages of a nation's growth. T. H. may be taken as shadowing the first extension of Roman territory beyond the city.

TUMBLE, *n.* *tŭm'bl* [*F. tomber*; *It. tombolare*; *Icel. tumba*, to fall: *AS. tumbian*, to tumble, to dance: *Dut. tuimelen*; *Sw. tumla*; *Dan. tumle*, to tumble]: a fall; *V.* to fall; to come suddenly to the ground; to rumple; to toss; to fall in quantities and tumultuously; to throw down; to roll or turn over; to throw somersets and perform other contortions, especially said of acrobats. **TUMBLING**, *imp.* *-bling*: **ADJ.** rolling: *N.* the act of falling; the performance of certain actors in a circus. **TUMBLED**, *pp.* *tŭm'bld*. **TUMBLER**, *n.* *-bler*, one who amuses the public by placing himself in various postures; a kind of latch in a Lock (q.v.); a drinking-glass—originally with pointed or round bottom so that it could not be set down without falling—hence it was necessary to empty it first; in modern usage, a drinking-glass without a stem or foot; a variety of the domestic pigeon which tumbles or turns over in its flight; a kind of dog. **TUMBLERFUL**, *n.* a quantity sufficient to fill a tumbler.

TUMBREL, *n.* *tŭm'brĕl*, or **TUMBRIL**, *n.* *-brĭl* [*OF. tomberel*; *F. tombereau*, a dung-cart—from *tomber*, to fall (see **TUMBLE**)]: a covered cart used to convey tools, ammunition, etc., in a military train; a cart or truck which may be tumbled or tilted up; a dung-cart; a ducking-stool; a frame or crib, made of willows and the like, for containing hay and other food for sheep.

TUMEFY, *v.* *tŭ'mĕ-fĭ* [*F. tuméfier*—from *L. tumefacĕrĕ*, to cause to swell or puff up—from *tumĕō*, I swell; *faciō*, I make]: to cause to swell; to swell; to rise in a tumor. **TUMEFYING**, *imp.* **TUMEFIED**, *pp.* *-fid*. **TUMEFAC'TION**, *n.* *-făk'shŭn* [*F.—L.*]: act of swelling; a swelling; a tumor. **TUMESCENT**, *a.* *tŭ-mĕs'sĕnt*, being or growing tumid. **TUMES'CENCE**, *n.* *-sĕns*, tumefaction.

TUMID—TUMOR.

TUMID, a. *tū'mĭd* [L. *tumĭdus*, swollen, protuberant—from *tumĕō*, I swell]: swollen; inflated or distended; protuberant; swollen in sound or sense; absurdly sublime; pompous; bombastic. **TU'MIDLY**, ad. *-lĭ*. **TU'MIDNESS**, n. *-nĕs*, or **TUMIDITY**, n. *tū-mĭd'ĭ-tĭ*, the state or quality of being tumid.

TUMOR, n. *tū'mĕr* [F. *tumeur*—from L. *tumor* or *tumōrem*, a swelling—from *tumĕō*, I swell]: a swelling or enlargement of any part of the body caused by morbid growth. **TU'MORED**, a. *-mĕrd*, swelled; distended.—In a general sense, any swelling may be called a tumor; more specifically, the word is used as a synonym for neoplasm or new growth, meaning a development of a mass of cells, without any direct inflammatory cause, and performing no physiological function. Tumors are naturally classified according to their structure, which corresponds to that of normal tissues, all forms of normal tissues being represented in tumors, excepting yellow elastic tissue. Thus the essential difference between the cells of a tumor and of a normal organ is that the former are not properly combined with cells of other kinds so as to perform useful roles, and that they tend to proliferate to an inconvenient or dangerous degree.

Cysts are usually included among tumors, though not exactly fulfilling the modern definition. They consist of a wall, usually of fibrous tissue, inclosing a soft or liquid mass. A wen is a 'retention cyst' caused by a stoppage of a sebaceous gland, the unctuous sebaceous secretion accumulating so as to form a tumor even as large as a child's head. Ovarian cysts, which may contain 50 quarts, are formed by a somewhat similar accumulation. They are almost always multilocular (that is, subdivided into many chambers) and filled with gelatinous material. Large unilocular cysts, filled with clear watery serum, may form in the layers of the broad ligament of the uterus and may be mistaken for ovarian cysts. Dermoid cysts, most commonly found in the ovary, contain imperfectly formed bone, sebaceous material, teeth, hair, etc., and are supposed to be due to the inclusion of misplaced embryonal cells in a developing organ.

The names of true tumors are formed by adding the Greek suffix *-oma* (swelling) to the name of the tissue represented. Thus we have fibroma, of fibrous tissue; myxoma, of mucoid tissue, represented normally by the vitreous humor of the eye; glioma, of the peculiar delicate connective tissue of the spinal cord and brain; lipoma, of fatty tissue; osteoma, of bony tissue; chondroma, of cartilaginous tissue; angioma, consisting of blood vessels of various sizes; lymphangioma, of lymphatic vessels; lymphoma, of lymphoid tissue; neuroma, of true nerve tissue, though most so-called neuromata are fibroid tumors; papilloma, or wart, of the combined tissues of a papilla of the skin; adenoma, of glandular epithelium. All the foregoing are essentially *benign*, that is, not tending to a fatal issue except from some such accident as pressure on the air passages or rupture and hemorrhage or breaking down into

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an abscess with resulting septicæmia, etc. Corresponding somewhat to lymphoma, are various forms of sarcoma; corresponding to papilloma, but differing in the tendency to grow internally rather than externally, is the epithelioma or cancer of external epithelium; and to the adenoma is the true glandular carcinoma or cancer. These three forms of neoplasm are spoken of as malignant, from their tendency to rapid growth and exhaustion of vitality. It must be borne in mind, however, that a tumor differs from an organ and a malignant tumor from a benign growth, not so much from any obvious difference in the cell constituents as in the tendency to form useless and wasteful masses of flesh.

All tumors necessarily involve some admixture of supporting, fibrous, tissue, but there is often a truly mixed tumor. Thus myxoma and neuroma are seldom of pure type, but are more correctly described as myxo-fibroma or neuro-fibroma. Gliomata are, by some, considered a form of sarcoma, though it is doubtful whether the fatal tendency manifested by them is intrinsic or due to the accident of location. Osteo-sarcoma is a common combination, and the ordinary scirrhus cancer might, analogously, be termed a fibro-carcinoma. In general, fibrous and fatty tumors are the least dangerous, and the more fibrous tissue a malignant tumor contains, the slower is its growth. Sarcoma is sometimes said to undergo fibroid development and to lose its malignant character altogether.

The cause of tumors is almost unknown. Dermoid and some other cysts, as well as the rare tumor representing striped muscle, are congenital. Epithelioma and carcinoma are not often found before the age of forty, sarcoma is rather a disease of childhood. Epithelioma, especially of the face, is often traced to repeated irritation of a sore or to malignant degeneration of a wart. It is possible that malignant tumors have a germ origin. Treatment, of all forms of tumors, may be summed up in the one word *removal*. The indication for removal is especially urgent in malignant disease, when the only hope is from prompt and radical operation.

TUMP—TUNBRIDGE.

TUMP, n. *tŭmp* [W. *tomp*, a round mass or heap, & hillock]: a little hillock; a knoll: V. to throw up the earth around a tree so as to form a hillock. **TUMP'ING**, imp. **TUMPED**, pp. *tŭmpt*.

TUMULAR: see under **TUMULUS**.

TUMULT, n. *tŭ'mŭlt* [F. *tumulte*—from L. *tumultus*, disturbance, agitation—from *tumēō*, I swell: It. *tumulto*]: the commotion of a multitude of people, with great noise and uproar; wild disorder; uproar; disturbance. **TUMUL'TUARY**, a. *-tŭ-ér-ĭ*, disorderly; agitated; confused and restless. **TUMUL'TUARINESS**, n. *-nēs*, lawlessness; turbulence. **TUMUL'TUOUS**, a. *-tŭ-ŭs*, conducted with confusion and noise; disorderly; turbulent; lawless. **TUMUL'TUOUSLY**, ad. *-lĭ*. **TUMUL'TUOUSNESS**, n. *-nēs*, the state of being tumultuous; disorder. **TUMULTUOUS ASSEMBLAGE** (see **RIOT**). —**SYN.** of 'tumult': commotion; uproar; ferment; turbulence; confusion; bluster; hubbub; noise; stir; brawl; riot; bustle; clamor; outcry; exclamation; shouting; bawling; —of 'tumultuous': boisterous; irregular; noisy; confused; violent; agitated; disturbed; seditious; riotous.

TUMULUS, n. *tŭ'mŭ-lŭs* [L. *tumŭlus*, a raised heap—from *tumēō*, I swell: It. *tumulo*]: a mound or hillock, anciently raised to mark a place of burial; a barrow (see **SEPULCHRAL MOUND**). **TU'MULAR**, a. *-lér*, or **TU'MULARY**, a. *-lér-ĭ*, consisting of a heap; formed in a heap or hillock. **TU'MULOUS**, a. *-lŭs*, or **TU'MULOSE**, a. *-lōs*, full of hillocks. **TU'MULOS'ITY**, n. *-lōs'ĭ-tĭ*, hilliness.

TUN, n. *tŭn* [F. *tonne*; Icel. and OHG. *tunna*, a cask: the same word as **TON**, which see]: a large cask: a measure consisting of 4 hhd. or 2 pipes; an old measure of capacity equal to 252 gallons (of 231 cubic inches); in old ale and beer measure the tun was equal to 216 gallons (of 282 cubic inches); a tun of whale-oil = 252 gallons, and is said to weigh 17 cwt. and about 30 lbs: V. to put into large casks. **TUN'NING**, imp. **TUNNED**, pp. *tŭnd*. **TUN-BELLIED**, a. having a large belly swelling out like the middle of a cask. **TO TUN UP**, to put liquor into a tun.

TUNBRIDGE, *tŭn'brĭj*: market-town of England, co. of Kent; on the Medway, 27 m. s.e. of London. The castle, on the Medway, near the entrance to the town, dates from the close of the 13th c., has a gate-tower of great size, richly ornamented, and is at present occupied as a military training school. The parish church is a large and old but sadly disfigured building. The chief establishment in the town is the grammar school; to it are attached 16 exhibitions of £100 a year, tenable at either Oxford or Cambridge Univ., besides 12 lesser exhibitions. The manufacture of toys and turned and inlaid articles of wood (see **TUNBRIDGE-WARE**) is a specialty.—Pop. (1871) 8,209; (1881) 9,340; (1891) 10,123.

TUNBRIDGE-WARE—TUNE.

TUN'BRIDGE-WARE: articles of wood, such as work-boxes, ring-boxes, desks, etc., covered with a veneer cut from a solid mass of small pieces of wood, of square and triangular shape, built up in geometric patterns, and carefully glued together; extensively manufactured at Tunbridge and Tunbridge Wells. This trade was formerly much greater than at present.

TUN'BRIDGE WELLS: famous English inland watering-place, the oldest but one in the country (Bath—q.v.—being the oldest); chiefly in Kent, partly in Sussex; 46 m. by rail s.e. of London, 5 m. s. of Tunbridge. The town, which is rapidly extending, occupies the head and slopes of one of the valleys of the Weald, and has in general a s.w. aspect, commanding very fine views. The three centres of population are Mounts Ephraim, Sion, and Pleasant, separated by a large common and cricket-ground. The town is charmingly irregular in plan; and much of it is laid out in districts called 'parks' with villas and mansions. The Wells, discovered 1606 by Lord North, are at the end of a promenade called the *Pantiles*. The waters are chalybeate. In the vicinity are charming rides and walks. The 'season' is June—Sep. T. W., a favorite resort for Londoners since the time of Queen Anne, reached its height as a fashionable resort toward the end of the 18th c.; and still attracts throngs of visitors, though not so specially a resort of London society (see Thackeray's *Virginians*).—Pop. (1881) 24,309; (1891) 27,895.

TUNDING, n. *tŭn'dĭng* [L. *tundo*, I beat]: in the *slang* of *Winchester School*, England, a beating with sticks given by a monitor to a school-fellow for a breach of discipline.

TUN-DISH, n. *tŭn'dĭsh*: OE. for a *funnel*.

TUNDRAS, n. *tŭn'drās* [Fin. *tuntur*, mossy flat]: swampy tracts of land, covered partly with a thick felt of bog-moss, partly with a dry snow-white covering of reindeer-moss and varieties of lichens; bordering the Arctic Ocean in Siberia, and stretching w. from the Ural along the n. of Europe. It is only the reindeer that renders this frightful waste habitable for the wandering hordes of Samoyeds, who hunt the furred animals as well as the swans and wild geese which in summer flock hither in vast numbers. These polar steppes, however, can be trodden only in winter, when the whole region is one sheet of frozen soil and ice. In summer, when the surface thaws, the greater part of the region becomes an inaccessible morass, except a portion along the n. coast of Siberia, which retains its snow covering throughout the year.—See Seebohm, *Siberia in Europe* (1880); *Siberia in Asia* (1882); and German works by Schrenk and Von Wrangel.

TUNE, n. *tŭn* [F. *ton*, tone, tune—from L. *tonus*; Gr. *tonos*, the sound or tone of an instr.: the same word as **TONE**]: a series of musical notes of a particular measure and of a given length; a melody; a short musical composition; the proper relation of notes and intervals to each other; the state or capacity of giving the due sounds; fit temper or humor; disposition; harmony; concert of parts; state as to

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order: V. to put into a proper state, as an instr., for producing the proper musical sounds; to put into any proper state or order so as to produce the proper effect; to form one sound to another; to sing harmoniously. TUNING, imp.: N. the operation of adjusting a musical instr. in order that its various musical sounds may be produced as correctly as possible. TUNED, pp. *tūnd*. TUNABLE, a. *tū'nā-bl*, that may be put in tune; in *OE.*, musical; melodious. TUNABLY, ad. *-bli*. TUNABLENESS, n. *-bl-nēs*, state of being tunable. TUNEFUL, a. *tūn'fūl*, harmonious; melodious. TUNEFULLY, ad. *-li*. TUNELESS, a. *-lēś*, unmusical; not harmonious. TUNER, n. *tū'nēr*, one whose occupation is to tune musical instrs. TUNING-FORK, a steel instr. having two flat prongs, which by their vibrations, when struck, or pressed together and then suddenly set free, produce a particular musical note, used for regulating the Pitch (q.v.) of instrs., and also of the human voice; tuning-forks are usually tuned in C, as in Great Britain, or in A, as in Germany. OUT OF TUNE, not in a proper state for use; not in a proper temper or disposition. TO THE TUNE OF, *familiarly*, to the amount of, as, 'he was fined to the tune of forty dollars.' TUNEFUL NINE, the nine Muses.

TUNGSTEN, n. *tūng'stēn* [Sw. *tungsten*, heavy stone—from *tung*, heavy; *sten*, a stone]: elementary body, a hard brittle metal of light steel-gray color and brilliant metallic lustre, which gives great hardness and increased magnetic power when mixed with steel. TUNGSTENIC, a. *tūng-stēn'ik*, pert. to tungsten. TUNGSTIC, a. *-stīk*, obtained from or formed of tungsten. TUNGSTIC ACID, acid composed of one equivalent of tungsten and three of oxygen. TUNGSTATE, n. *-stāt*, a salt of tungstic acid and a base.—*Tungsten* (symb. W, at. wt. 184, sp. gr. 17.4) is a rare metal, derived chiefly from Wolfram (q.v.) (whence its symbol W), which is a tungstate of iron and manganese, and likewise occurs in Scheelite, which is a tungstate of calcium. It is unnecessary to describe the means of separating the metal, which may be finally obtained either as a dark-gray powder or in heavy iron-gray bars, which are very hard, and difficult of fusion. Aqua regia and nitric acid convert it into tungstic oxide. When 10 parts of this metal are alloyed with 90 of steel, a mass of extraordinary hardness is obtained.

T. forms three compounds with oxygen: (1) a dioxide, WO_2 , which is obtained in a brown powder by heating tungstic acid to low redness in a current of hydrogen, and which does not form salts with acids; (2) a trioxide, known as *Tungstic Oxide*, WO_3 ; (3) a pentoxide, W_2O_5 . Hot solutions of alkaline tungstates, when neutralized with an acid, yield a yellow precipitate—*tungstic monohydrate*, or *tungstic acid*, H_2WO_4 . Tungstic acid dissolves easily in alkalis. *T. disulphide*, WS_2 , is obtained in soft black aciform crystals by igniting T. with sulphur. The *Trisulphide*, WS_3 , is formed by dissolving tungstic acid in ammonium sulphide, and precipitating with an acid. It unites freely with the basic metallic sulphides, forming the *thiotungstates*.

TUNGÛS—TUNIC.

TUNGÛS, *tŭn-gô's'*: ethnographic group of the Turanian family, at present n. and e. of the Mongol group, inhabiting the vast plains stretching s. from the icy sea of Siberia, between the Yenesei and the Lena, the n. slopes and valleys of the Great Altaï, and the hilly uneven tract between the upper Amur and the Lena. The chief peoples included under this group are the Niujin, the Däurians, Tshapodshirs, Manchûs (in the s.e.), and Lamûts (on the e. coast). In the n. they have intermingled with the Samoyedes; in the w. with the Ostiaks, whose territory is on the other side of the Yenesei; and in the s. the Manchûs have been the rulers of China since 1643. Divided politically between Russia and China, the s. portion are Buddhists, while the tribes further n. mostly practice Shamanism (q.v.), a few having, by strenuous exertions of the Russian govt., been induced to profess Christianity. The T. are partly nomad and wandering, partly agriculturists and settled rearers of cattle. The first of these are commonly classed according to the districts that they prefer to dwell in, as T. of the forests, or T. of the steppes: the former being shepherds, hunters, or fishers; the latter exclusively shepherds. The steppe T., again, are divided according to the animals of draught that they employ, into the reindeer-T., the horse-T., and the dog-T. The T. are in general robust and lively, with flat visage and small eyes, the latter characteristics, however, being much less prominent in them than in the Kalmucks. A portion of the Chinese Tungûs constitute the Ssolon nation, famed as warriors in Chinese modern history. The Tshapodshirs tattoo their faces.

TUNGUSIC, a. *tŭn-gô'z'ik*: of or pertaining to the Tungus, or the languages (Ūral-Altaic) spoken by the Tungûs.

TUNHOOF, n. *tŭn'hóf* [see **ALEHOOF**, under **ALE**]: *alehoof* and *tunhoof*, old popular names of ground-ivy, the leaves of which were formerly employed to preserve ale before hops came into use.

TUNIC, n. *tŭ'nĭk* [L. *tunĭca*, an under-garment of the Romans worn by both sexes: It. *tunica*: F. *tunique*]: a long garment worn over the alb by an officiating clergyman in the Rom. Cath. Church; any loose frock or coat drawn in at the waist and reaching only a little way below it; a natural covering, as a seed-cover. **TUNICATED**, a. *tŭ'nĭ-kā-tĕd*, covered with a tunic or membrane; in *bot.*, covered by thin external scales, as the onion. **TU'NICLE**, n. *-nĭ-kl*, a little tunic; a natural covering; an eccles. garment, the same as the tunic or dalmatic. **TU'NICA'TA**, n. plu. *-kā'tă*, or **TU'NICARIES**, n. plu. *-kĕr-ĭz*, a class of invertebrata, called also Ascidians, having the body inclosed not in a shell, but in a soft elastic tunic, perforated by two apertures and composed of a substance resembling Cellulose (q.v.). The T. are extremely numerous, and are found in all seas (see **ASCIDIA**: **ŠALPA**: **ZOOLOGY**). **TU'NICIN**, n. *-nĭ-sĭn*, the substance, allied to cellulose, of which the test of tunicata is composed.

TUNIS.

TUNIS, *tū'nīs*: French protectorate, formerly one of the Barbary States, in n. Africa, e. of Algiers; washed on its n. and e. coasts by the Mediterranean; touching the desert on the s., and Tripoli on the e.; greatest length n. to s. about 440 m.; average breadth 160 m.; about 45,000 sq. m. Pop. (1901) 1,900,000, mostly Bedouins, Arabs, and Kabyles.—The Atlas range traverses T. and terminates here. The n. coast is rocky and steep, with numerous bays, of which the largest is the Gulf of T.; and two of its promontories, Capes Blanco (*Rās-el-Abid*) and Bon, are the most northern in Africa. The e. coast is flat, sandy, and infertile, like that of Tripoli: it has two large gulfs, Hammanet and Cades (*Syrtis Minor* of antiquity). The s. part of T. belongs to the desert steppe known as Belud-el-Jerid. There is only one fresh-water lake of much size, that of Biserta or Bensart, near the n. coast. No rivers are navigable. The longest is the Mejerdah (*Bagradas* of the ancients), the most important river in n. Africa, which flows generally n.e. about 300 m. into the Gulf of T. Other streams are the Ved-el-Milianah and the Ved-el-Kebir. There are several mineral springs in the country. The climate is fine, and the soil exceedingly fertile, so that, in spite of very poor agriculture, wheat, barley, maize, durra, pulse, olives, oranges, figs, grapes, pomegranates, almonds, and dates are abundantly produced. The culture of oil is extensive and very lucrative. Great herds of cattle are fed on the plains; the sheep are famous for their wool; and the horses and dromedaries are no less notable. The chief mineral products are sea-salt, saltpetre, lead ore, and quicksilver. In the vicinity of the sea-coasts, but chiefly in the cities of Tunis and Susa, there are some active industries. The total revenue (1894) was \$4,646,200, expenditure \$4,626,770. The value of the imports (1894) was \$8,364,663; exports \$7,386,553. The leading imports were cotton and metal goods, sugar, coffee, and clothing; the exports, olive-oil, cattle, wheat, barley, tan, sponges, and zinc ore. T. has in operation about 300 m. of railroad.

The predominant race is of Arabic descent, but there are many Berbers, especially in the interior. The territory corresponds nearly with that of ancient Carthage; and for a sketch of its pre-Christian history, see CARTHAGE: ROME: HANNIBAL: HAMILCAR: SCIPIO: JUGURTHA: ETC. Its subsequent fortunes, till 1575, are interwoven with the general fortunes of Barbary (q.v.); but in that year Sinan Pasha conquered and incorporated it with the Ottoman empire, and gave it a new constitution. The govt. was placed in the hands of a Turkish pasha, a divan or council, composed of the officers of the Turkish garrison, and the commander of the Janizaries. After a few years an insurrection of the soldiery broke out, and a new government was established, whose head was a 'Dey,' with very limited authority; the chief power being exercised at first by the military divan. Gradually, however, an officer with the title of 'Bey,' whose original functions had been confined to the collection of tribute and taxes, acquired supremacy over the other authorities, and finally obtained a kind of

TUNIS—TUNISIAN.

sovereignty, which Murad Bey succeeded in making hereditary. The family of Murad Bey ruled in T. for 100 years, and gained undesirable renown by their conquests on the mainland and their piratical enterprises against Christian powers at sea. During the 18th c., T. became tributary to Algiers. About the beginning of the 19th c., Hamuda Pasha threw off the Algerian yoke, subdued the Turkish militia, and created a native Tunisian army; in consequence of which T. virtually attained independence. Subsequent rulers, Achmet Bey (1837), Mohammed Bey (1855), and Mohammed Sadyk Bey (1859), have been liberal, enlightened, and reforming. By a firman of 1871, the sultan renounced the tribute formerly exacted, and fixed the relations of the Sublime Porte to Tunis. With the proclaimed purpose of chastising the Kroumir tribes, who had made incursions into Algerian territory, France sent an expedition to T. in the spring of 1881; but the result was that under compulsion the bey signed a treaty (1882) giving France extensive power, and practically making T. a French dependency or protectorate. T. is still nominally under the authority of the bey; but a French minister resident really controls affairs. The Porte protested in vain; but persistent insurrections against French authority necessitated tedious and extensive military operations.—See works on T. by Hesse-Wartegg, Reid, and Broadley (all 1882).

TU'NIS: city, cap. of the regency of T.; on a small lagoon, near the s.w. extremity of the Lake of T., about 3 m. from the ruins of ancient Carthage. The streets are narrow, unpaved, and dirty; but the bazaars are well furnished, and many of the mosques are really splendid. All the mosques are closed against Christians. The ceilings of the bey's palace glitter with gold and carmine and azure: the court-yard is paved with marble and surrounded by arcades supported on marble columns. The citadel, begun by Charles V. and finished by Don John of Austria, is interesting from its collection of old arms, and was formerly the great slave-prison of Tunis. There are also Rom. Cath. and Greek churches, Jews' synagogues, an Italian theatre, and large barracks. T. is the commercial centre of the state, and, having been made directly accessible to ocean-going vessels by the cutting of a ship-canal (1893), more than 80 per cent. of the total imports pass through it. T. has many industries; among the chief are making of silks and woollens—e.g., shawls, tapestries, mantles, burnouses, caps, turbans, colored cloths; also leather, soap, wax, and olive-oil.—Pop. (1891) 153,000, of whom 40,000 are Europeans, and the remainder Moors, Arabs, negroes, and Jews.

The lagoon or Lake of T. is shallow, and communicates with the *Gulf of T.*, an inlet of the Mediterranean, by a narrow strait called the Goletta. The Gulf of T. is 45 m. broad at the entrance between Cape Bon and Cape Farina, and extends inland 30 m. The anchorage is good.

TUNISIAN, n. *tū-nīs'ī-ăn*: a native of *Tunis*, in the n. of Africa: ADJ. of or pertaining to *Tunis*.

TUNKERS

TUNKERS, *tŭng'kérz*, often called DUNKARDS, *dŭng'kérdz*; but terming themselves simply Brethren, or The Brethren: religious sect, occupying settlements in New England, N. Y., Penn., Ohio, Ind., and other middle and s. states. They are nowhere numerous, and are chiefly agricultural people. They profess that their association is founded on the principle of brotherly love. The name T.—from the German, signifying Dippers, and due to their dipping in baptism—is commonly, by corruption, pronounced and written *Dunkards*. In the vicinity of their settlements, they are known frequently as the *Harmless People*. They derive their origin from a small village on the Eder in Germany, but have been an exclusively American sect since the beginning of the 18th c., when they all emigrated to America. They reject infant baptism, and have no ministers specially devoted to the ministry as a profession. Every brother is allowed to stand up in the congregation and exhort; and when one is found particularly apt to teach, he is ordained by laying on of hands with fasting and prayer, and is expected to devote himself in some measure to the ministry, though without any stipend or pecuniary reward, even if his own crops should suffer by his neglect of them. Deacons and deaconesses are appointed. Like the Quakers, they use great plainness of dress and language; they refuse to take oaths or to fight; and they will not go to law. They celebrate the Lord's Supper, and accompany it with love-feasts, washing of feet, the giving of the right hand of fellowship, and the kiss of charity—all which observances they regard as scriptural. They anoint the sick with oil in order to their recovery, depending on this unction and prayer, instead of on medicine. They generally believe in the doctrine of universal salvation; but it is not a tenet of the sect. They do not insist on celibacy as an absolute rule; but they commend it as a virtue, and discourage marriage. They are industrious and honest, and universally held in good repute among their neighbors.

In 1882-3 the sect was divided into three branches, popularly known as the Conservative, Progressive, and Old Order Brethren, by reason of differences concerning the enforcement of the principle of non-conformity to the world.—The largest branch 1890 was the Conservative, which was represented in 28 states and 2 territories, had 720 organizations, owned more than 850 church edifices, rented 180 halls, had church property valued at \$1,121,541, 61,101 members, and was strongest in Penn., Ind., and O. This branch maintains Sunday schools, schools for higher education, and missionary enterprises. The Progressive branch was represented in 15 states, chiefly Penn., Ind., and O.; had 128 organizations, owned nearly 100 church edifices, rented 37 halls, had church property valued at \$145,770, and 8,089 members. They style themselves Brethren, and object to the name T. or Dunkards. The Old Order Brethren were believed to number about 3,000 members, but for years they have declined giving information about themselves.

TUNNAGE—TUNNEL.

TUNNAGE, n. *tŭn'nāj*: same as **TONNAGE** (q.v.).

TUNNEL, n. *tŭn'nĕl* [F. *tonnelle*, a trellised walk, a tunnel for entrapping partridges—from *tonne*, a tun, an arbor (see **TON** and **TUN**): comp. Gael. *tunna*, a tun, a vat: W. *turnel*, a tub, a vat]: vaulted underground passage, often through a hill or under a river—so named from its resemblance to the interior of a tun or cask; in *OE.*, shaft of a chimney; passage for the smoke; a funnel; a net wide at the mouth and ending in a point: **V.** to form or cut a tunnel through or under; to hollow out in length; in *OE.*, to catch in a tunnel-net. **TUN'NELLING**, imp.: **N.** the operation of cutting a passage through a hill or under a river, and arching the roof. **TUN'NELLED**, pp. *-nĕld*: **ADJ.** having a tunnel formed or made through; penetrated or cut through, wholly or partially, as a hill. **TUN'NELLERS**, n. plu. *-ĕrz*, on *shipboard*, men who fill casks with water. **TUNNEL-KILN**, a lime-kiln in which coal is burned. **TUNNEL-NET**, in *OE.*, a net wide at one end and narrow at the other.

TUN'NEL: passage constructed under ground to carry a road, railway, canal, stream of water, or the like. Tunneling, long in use for roads and aqueducts, has of late received great development for railways. In tunnels of considerable length, as the progress made by working from the two ends would be very slow, it is considered advisable to begin the work from many points of its length; for this purpose, shafts or pits are made at these points down to the level of the T. Of these shafts, some are temporary, kept open only till the end of the work; others are permanent, and for ventilation of the tunnel when in use. These shafts have to be large enough to allow the ascending and descending skips or buckets containing the excavated materials to pass one another. For the temporary shafts, an elliptical shape is found to give the greatest room for this purpose at the least expense. Square shafts are avoided, on account of the difficulty of excavating the corners in rocky strata. As the shaft descends, its sides are lined with timber-planks, supported by strong timber-frames, about 5 ft. apart. The permanent shafts, when the material is not of rock sufficiently solid, are lined with brick-work or masonry, built in lengths, as the shaft proceeds downward. These permanent shafts are generally made circular in section; and it is found better to place them 9 to 12 ft. from the side of the T., communicating with it by a small passage: this is convenient in the construction, also forms a useful refuge for workmen during the passage of trains. These shafts are usually about 10 ft. diameter. They are sunk a few ft. below the floor of the T., to form a pit for the collection of the water from the workings, which is hauled to the top in barrels or buckets. The raising of the excavated material and the water, and the lowering of building materials and of the workmen, is done by a windlass, a horse-gin, or steam-power, according to the extent of the work. On the completion of the shaft, the T. is begun in both directions from its bottom; and in ordinary rock it is found convenient to begin by making a small adit, or passage, along from shaft

TUNNEL.

to shaft, through the whole length of the T.; this is made 6 or 7 ft. high, and the top of it placed at the level of the top of the tunnel. When this is completed, the correct centre line is marked out in it throughout the T.; the adit is then enlarged to the shape and size of the arch of the T., which is built in; and then the excavation is completed, and side-walls built up to underpin the arch. In cases where the material is soft and full of water, the full section of the T. is usually carried forward at once; and in such cases an invert has to be built between the side-walls, to withstand the upward pressure, as the pressure of soft material has the character of a fluid pressure, and presses the T. on all sides. The excavation is then done in lengths of about 24 ft., each firmly secured with poling-boards and timber bars, and securely shored; the centres are then set, and the brick-work built up. The timber bars are usually drawn out when the brick-work is carried up, and the holes that they leave are rammed tight with clay; but the bars have sometimes to be built in. When the quantity of water is very great, an adit is driven through the T., at the level of its floor, before the work is begun, to allow the water to run off.

Tunnels are generally made straight, but sometimes they are curved; this is done that they may pass under the lowest part of the hill, that the shafts may be as short as possible. They are frequently constructed on steep gradients; but as the trains experience some resistance from the air in passing through them, it is advisable not to make them so steep as the gradients in the open air.

The Mont Cenis T. (see CENIS, MONT) greatly surpassed any earlier enterprise of the kind. Its name is really a misnomer: the T. is a considerable distance from Mont Cenis, and the chief summit under which it passes is the 'Grand Vallon' (11,000 ft. high). This T. connects the railways of France and Italy, and is on the direct railway route from Paris to Turin. The length is 7 m. $4\frac{3}{4}$ furlongs. It is 434 ft. higher at Bardonnèche, on the Italian side, than at Modane, on the French side; therefore it is on a gradient of 1 in $45\frac{1}{2}$ from Modane to the middle, and thence it falls 1 in 2,000 to Bardonnèche, this latter fall being sufficient to run off the water. The dimensions at Modane are 25 ft. $3\frac{1}{2}$ inches wide at base, 26 ft. $2\frac{3}{4}$ inches at widest part, and 24 ft. 7 inches high—the arch being nearly semicircular. At Bardonnèche it is $11\frac{1}{2}$ inches higher. It is all lined with stone-masonry, except at the Bardonnèche end, where the arch is brick. The work was begun 1857, and was at first done in the usual way, by hand; but 1861 the perforating machines described below were introduced on the Italian side, and two years later on the French side. 1863, June 30, the T. had been driven 5,400 ft., and the rate of advance was $9\frac{1}{2}$ ft. per day. All efforts of the engineers to accelerate the work were for several years unavailing; and 1866, Oct., just one-half the distance, or 20,040 ft., had been pierced, showing the same constant rate of $9\frac{1}{2}$ ft. per day. At this rate, the T. would not have been completed till 1872. By improved modes

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of working, and with a favorable change in the nature of the rock, the rate became greater toward the end, and the two parties met 1870, Dec. 25. The T. was formally opened 1871, Sep. A premium was to be paid by the French govt. to the Italian govt., which did the work, for each year by which a term of 25 years, counting from 1862, was reduced. The French govt. were also to pay \$6,262,542 for construction of one-half the tunnel when completed. This great work, which appeared almost impracticable to ordinary methods of tunnelling by manual labor, was rendered practicable by machinery introduced by the engineers, Sommeiller, Grandis, and Grattoni. The great difficulty lay in the fact that, from the great height of the mountain, shafts were impracticable, and progress could be made only from each end. The ventilation also presented serious difficulties. Sommeiller perfected a small machine, weighing 6 cwt., which bored a hole $1\frac{1}{4}$ inch diameter and 3 ft. deep in 20 minutes; the time taken by two miners working by the ordinary method being two hours: 11 of these machines were placed on a movable support, and were capable of working at almost any angle. Three or four large holes were bored in the centre of the heading, and round these other holes of the ordinary size, in all 80 holes. The large holes were not fired, but were for the purpose of weakening the rock. The others were then charged and fired in succession and in detachments, beginning with those nearest the centre, and working outward. The machines were worked by compressed air acting, like high-pressure steam, on a piston in a cylinder; this air being compressed outside the T. by water-power acting on the hydraulic-ram principle, also by an air-pump; it was used at a pressure of five atmospheres above the atmospheric pressure, and was conveyed to the workings by a pipe $7\frac{5}{8}$ inches diameter. After it had expended itself in working the borers, it escaped into the T., and so ventilated the workings. The advanced heading was the only place where these machines were used. During the construction, a temporary locomotive railway was laid along the road over the pass.

The St. Gothard T., a still more stupendous enterprise, was begun 1871, Jan.; and 1880, Feb. 29, the borings from the Swiss and Italian sides met, though much time and labor were still requisite to prepare the T. for railway traffic. The total length is $9\frac{1}{4}$ m., width $21\frac{1}{2}$ ft. The average rate of progress was 18 ft. per day; the improved M'Kean drill, latterly used, cut its way at the rate of 12 in. per minute. The contract of the T. was for \$10,000,000; but the actual cost, including approaches, was greater. The Simplon T. (a double one) connecting the valleys of upper Rhone, Switzerland, and Diveria, Italy, is $12\frac{1}{4}$ m. long.

A T. connecting England and France beneath the Channel, for which a company was formed 1872, would eclipse all former undertakings; its length would be 31 m. But in 1883 the Brit. govt. declined to sanction the undertaking. The Arlberg T., begun in the middle of 1880, was completed 1885; it is $6\frac{3}{4}$ m. long, and gives direct railway

communication between the Austrian province of Vorarlberg, touching Lake Constance, and Innsbruck in the Tyrol. The Mersey railway T., between Birkenhead and Liverpool, $4\frac{1}{2}$ m. from station to station, was finished 1886.

The most noted adits in the world are the ones at Schemnitz, Hungary, begun 1782, finished 1878, 10·27 m. long, built to carry off the waters from the mines; and the so-called Sutro T., in Virginia City, Nev., 20,000 ft. long, built to ventilate and drain the Comstock lode mines.

In the United States, the largest T. is that extending through the Hoosac Mountain in Mass., near the N. Y. and Vt. boundary-lines, controlled by the Fitchburg Railroad Company. It was projected 1825 for a canal, but the scheme was abandoned soon afterward on account of the introduction of the railroad system. In 1851 some experimental work was done; 1856 tunnelling was begun; 1862 the state assumed control of the work; and 1876 the work was sufficiently advanced to permit the passage of regular railroad trains on its two tracks. Owing to long suspensions, it was not completed until 1883. The T. is $3\frac{3}{4}$ m. long, and, with about 40 m. of adjoining railroad, it cost \$15,000,000.—The longest river T. in the world is the one connecting Port Huron, Mich., and Sarnia, Canada, beneath the St. Clair River (q.v.). It is 6,050 ft. long, was built in 20 months, cost less than \$3,000,000; was the first cast-iron segmental T. constructed.—In 1902 two companies were incorporated to construct railway tunnels under the Hudson, one of them proposing to operate a line from the n. boundary of New Jersey to the intersection of Park Ave. and 57th St., 6 m. The other company, for the Pennsylvania railroad, has as its plan direct underground communication between New Jersey and Long Island, by means of 2 tunnels under the Hudson and 4 under the East River. The grade will be from 35 to 40 feet below the surface.—Other notable railroad tunnels are those of the Delaware Lackawanna and Western and the Erie railroads through Bergen Hill, N. J., the longest 4,200 ft.; the Musconetcong T. of the Lehigh Valley road, 4,829 ft.; the Nesquehoning of the Lehigh Coal and Navigation Co.'s road, through Locust Mountain, 3,800 ft.; the Sand Patch of the Baltimore and Ohio road, through the Allegheny Mountains, 4,800 ft.; the Greenbrier river, also in the Alleghenies, at the Big Bend, 6,400 ft.; and nearly 50 of less length.—The principal subaqueous tunnels in operation are two under the bed of Lake Michigan at Chicago, each 2 m. long, built to supply the city with pure water; two road tunnels under the Chicago river; and one under the bed of Lake Erie at Cleveland, $1\frac{1}{4}$ m. long, built for water-supply.

TUNNEL, ST. CLAIR RIVER RAILWAY: see **ST. CLAIR RIVER.**

TUNNY—TUPELO.

TUNNY, n. *tŭn'ni* [L. *thunnus* or *thynnus*; Gr. *thunnos*, the tunny-fish—from Gr. *thunein*, to hurry or dart along: It. *tonno*: F. *thon*]: a fish of the genus *Thynnus* and family *Scomberidae* (q. v.); the Spanish Mackerel (q. v.), but much larger than the mackerel, and highly esteemed as food along the Mediterranean, where it is particularly abundant. The T. is a large fish, sometimes nine ft. long, and weighing 1 000 lbs., or even more. Its form is much thicker than that of the mackerel; its tail so widely forked as to be crescent-shaped.—The Phœnicians established a T.-fishery at a very early period on the coast of Spain, and the T. appears on Phœnician medals of Cadiz and Carteia. Salted T. was much esteemed by the Romans, and was called *Saltamentum Sardicum*. The T. is captured generally by means of nets arranged in a funnel-like form, the fish entering the wide mouth of the funnel, and being gradually driven to the narrow end, where they are killed by lances and harpoons. The line of nets is often more than a quarter of a mile long, and costs about \$6,000.—The AMERICAN T. (*Thynnus secundo-dorsalis*) is commonly called the Horse-mackerel: it is found on the coasts of N. Y., and thence n. to Nova Scotia. It sometimes attains a length of 12 ft. It is nearly black above, silvery on the sides, and white below. Its flesh is much esteemed. It yields much oil, obtained by boiling the head and the belly: 20 gallons are often obtained from a single fish.

To the same genus with the T. belong the Striped Bonito, and the Albacore or Albicore (*T. albacorus*), which inhabits the W. Indian seas, and is esteemed for the table. The name Albicore, however, seems to be often given to different species of this family inhabiting tropical seas, and sometimes to the T. itself. The Long-finned T. (*Oreynus alalonga*), about 12 lbs., off the coast of Cal., is there called Albicore.

TUNSTALL, *tŭn'stal*: market-town in Staffordshire. Eng.: 168 m. n.w. of London, on a branch of the London and Northwestern railway, and on the Trent and Mersey canal. Among its public buildings are the market, town-hall, and the old court-house, now used as a free public library and reading-room. There are veins of coal, iron, and clay in the vicinity, and it manufactures ironware, pottery, tiles, and brick.—Pop. (1881) 14,244; (1891) 15,743.

TUP, n. *tŭp* [OF. *toup*, a ram—probably from butting with his head (see TOP): It. *toppa-toppa*, expressive of repeated blows]: a ram; a male of the sheep kind: V. to butt, as a ram; to copulate, as a male sheep. **TUP'PING**, imp. **TUPPED**, pp. *tŭpt*.

TUPAIA: see BANXRING.

TUPELO, *tŭ'pē-lŏ*: tree of the genus *Nyssa*, nat. order *Cornaceæ*, native of N. America, chiefly of the southern United States; having simple alternate leaves, mostly entire, greenish inconspicuous flowers at the extremity of long stalks, the fruit a drupe. *N. multiflora* attains a height of 60-70 ft., but is usually a middle-sized tree, with beech-

TUPELO.

like horizontal branches and light spray, which turns bright crimson in autumn. The wood is 'unwedgeable,' the fibres crossing obliquely. It is often called BLACK GUM TREE, or Sour Gum Tree, or Pepperidge. *N. uniflora*, the LARGE T., is a lofty and beautiful tree, remarkable for extraordinary enlargement of the base of the trunk, which is sometimes eight or nine feet in diameter, while at no great height the diameter diminishes to 15 or 20 in. The fertile flower is solitary on a slender peduncle. The fruit, oblong and blue, resembles a small olive, and is preserved in the same way by French settlers in America. *N. candicans* or *capitata*, the OGECHEE LIME, is a small tree, of which the fruit is very acid and is used like that of the lime. The wood of all the species is soft, that of the Large T. remarkably so.

TUPPER—TURACIN.

TUPPER, *tŭp'ér*, BENJAMIN: soldier: 1738, Aug.—1792, June; b. Stoughton, Mass. He served in the French war 1756–63. At the beginning of the revolution he was maj., and became col. of a Mass. regt. 1776, and the same year commanded a flotilla of gunboats and galleys in the Hudson river, N. Y. He served at Saratoga under Gen. Horatio Gates, and was in the battle of Monmouth. He was brevetted gen. before the end of the war. T. was one of the originators of the Ohio Land Co. He settled in Marietta, O., 1787, and was judge 1788.

TUPPER, Sir CHARLES, K.C.M.G., M.D., D.C.L.: statesman: 1821, July 2— ————; b. Amherst, Nova Scotia. He was educated at Acadia Coll. and at Edinburgh; won the diploma of the Edinburgh Royal Coll. of Surgeons 1843; entered political life in Nova Scotia 1855; was member of the executive council, and provisional sec. 1857–60; prime minister 1864–67. He was elected to the first parliament of the Dominion of Canada; became member of privy council 1870, and was pres. of that body till 1872, when he was made minister of inland revenue. He was minister of customs 1873–78, of public works 1878, of railways and canals 1879–84, of finance 1887; was appointed high commissioner of Canada in London 1884–88; member of the fisheries conference 1887; was created a baronet 1888. In 1896 he became premier of the Dominion. His administration was defeated on Manitoba school bill, and he was succeeded by the Hon. Wilfred Laurier.

TUPPER, MARTIN FARQUHAR, D.C.L., F.R.S.: English poet, popular rather than great: 1810, July 17—1889, Nov. 29; b. London; son of Martin T., a well-known surgeon, descended from a family which had been expelled from Germany, 1548, on account of Prot. opinions, and had long been settled in Guernsey. Martin T. was educated at the Charter-house, and afterward at Christ-Church, Oxford. On leaving college he entered as a student at Lincoln's Inn, and was called to the bar 1835; but never practiced. In 1832 he published anonymously a small volume of poems, which attracted little attention. His *Proverbial Philosophy* appeared 1839, and was immensely popular both in Great Britain and in the United States, though ridiculed by the critics. Half a million copies were sold in the United States alone. A fair criticism would probably decide that, while there is nothing in T.'s *Proverbial Philosophy* to justify its enormous success—so far as mere circulation goes—the book is yet something better than the mere conglomeration of stupid platitudes which its detractors so confidently declare it to be. Besides this work, on which his reputation rests, T. published *The Crock of Gold*, 1844, a tale; *Geraldine*, 1838, a ludicrous attempt to complete Coleridge's inimitable fragment *Christabel*; *Modern Pyramid*, 1839; *King Alfred's Poems in English Metre*, 1850; with other work in prose and verse. He died in London.

TURACIN, n. *tŭ'ră-sîn*: a pigment containing copper, found in the feathers of some species of the *touraco* or plantain-eater.

TURANIAN, a. *tū-rā'nī-ān* [in Pers., *not Iranian*, i.e., not Persian]: term used by Sassanian monarchs to designate the parts of their realm lying outside Iran; then a designation for the family of languages now generally designated the *Ural-Altaic*. Other terms have been suggested for this family—e.g., *Alatyan*, the Tartars of Siberia calling themselves *Alatys*; *Sporadic*, as said of scattered languages; or *Allophylian*—that is, spoken by other different tribes. As a philological term, *Turanian* may be taken as equivalent to *agglutinative* (see **PHILOLOGY**).—*Turanian languages* are classed by Max Müller in two great divisions, the Northern and the Southern. The N. division falls into five sections—the *Tungusic*, *Mongolic*, *Turkic*, *Finnic*, and *Samoyedic*. Of these, the Tungusic dialects, which extend n. and w. from China, are the lowest in organization, being nearly as destitute of grammatical forms as the Chinese. The Mongolic dialects are superior to the Tungusic, though the different parts of speech are hardly distinguished; both branches, however, show a tendency to grammatical development. The Turkic dialects, of which the Osmanli or Turkish of Constantinople is the most prominent, occupy an immense area, from the Lena and the Polar Sea to the Adriatic. They are rich in grammatical forms, especially in the conjugation of the verb. The most important members of the Finnic class are the Finnic of the Baltic coasts (see **FINNS**), and the Hungarian or Magyar (see **HUNGARY**). These have also a fully developed grammatical structure, and in point of declension are richer than the Turkic.

The S. division comprises, among others, the *Tamulic* or Dravidian dialects of s. India (see **TAMIL**); the *Gangetic* group, in two branches, the Trans-Himalayan (Tibetan, q.v.) and Sub-Himalayan (Bhotanese, etc.); the *Taic*, or the dialects of Siam; and the *Malaic*, or Malay and Polynesian dialects. T. languages do not present the unmistakable family likeness and the clear evidences of genealogical relationship presented by the Aryan and Semitic groups. The nature of their structure, and the nomadic character of the peoples speaking them, are sufficient to account for their diversity, even supposing them to have all sprung from the same stock. The only characteristic T. feature which always remains is this: the root is never obscured; the determining or modifying syllables are generally placed at the end, and the vowels do not become so absolutely fixed for each syllable as in Sanskrit and Hebrew. On the contrary, there is what is called the Law of Harmony, according to which the vowels of each word may be changed and modulated to harmonize with the key-note struck by its chief vowel. The vowels in Turkish, for instance, are divided into two classes, *sharp* and *flat*. If a verb contains a sharp vowel in its radical portion, the vowels of the terminations are all sharp; while the same terminations, if following a root with a flat vowel, modulate their own vowels into the flat key. Thus we have *sev-mek*, to love, but *bak-mak*, to regard, *mek* or *mak* being the termination of the infinitive. The term 'Turanian' is

TURBAN—TURBOT.

now usually restricted to the Northern division, but is being rapidly superseded by the more exact term 'Ural-Altaic.'

TURBAN, n. *tér'băn* [F. *turban*—from Sp. and It. *turbante*, a turban—from Pers. *dulbanā*, a turban: the spellings *tolibant*, *turribant*, *turband*, occur in OE.]: the usual covering for the head worn by the people of eastern nations, consisting of a quilted cap round which a sash or scarf is twisted; a lady's head-dress; a hat consisting of a crown either without a brim, or with a brim turned up close along the crown; the whole set of whorls in a shell. **TUR'BANED**, a. *-bānd*, wearing a turban.

TURBARY, n. *tér'bā-rĭ* [mid. L. *turbāria*—from OHG. *zurba*, turf]: a place where peat or turf is dug; the right of digging peat or turf; a swampy peat-moss. **TURBARY DEPOSITS**, in *geol.*, swampy deposits.

TURBELLARIA, n. plu. *tér'bĕl-lā'rĭ-ă* [L. *turbellæ*, a bustle, a stir—from *turba*, a crowd]: in *zool.*, an order of flattened worms; the whirl-worms.

TURBETH, n. *tér'bĕth*: see **TURPETH**.

TURBID, a. *tér'bid* [L. *turbĭdus*, confused, disordered; *turbāre*, to disturb—from *turba*, a crowd: Sp. *turbido*, muddy]: thick; muddy; not clear, as a liquid. **TUR'BIDLY**, ad. *-lĭ*. **TUR'BIDNESS**, n. *-nĕs*, or **TURBID'ITY**, n. *-ĭ-tĭ*, the state or quality of being turbid; muddiness.

TURBINATE, a. *tér'bĭ-nāt*, or **TUR'BINATED**, a. *-nā-tĕd* [L. *turbĭnātus*, pointed like a cone, conical—from *turbo* or *turbĭnem*, a whipping-top: F. *turbĭnĕ*]: in *bot.*, shaped like a top, or a cone inverted; wreathed conically; spiral-shaped. **TUR'BINA'TION**, n. *-bĭ-nā'shŭn*, the act of spinning or whirling, as a top. **TUR'BINE**, n. *-bĭn*, a horizontal water-wheel (see **WATER-POWER**).

TURBINIDÆ, *tér-bĭn'ĭ-dĕ*: family of gasteropodous mollusks, having a spiral shell, with a narrow entire aperture. The species are numerous and widely distributed. Some are large, others small; some are very beautiful. The beautiful pheasant-shells (*Phasianella*) of the South Seas are referred to this family.

TURBITH, n. *tér'bĭth*: another spelling of **TURPETH**.

TURBOT, n. *tér'bōt* [F. *turbot*; Dut. *tarbot*, turbot: said to be connected with Dut. *bot*, a plaice: most probably from L. *turbo*, a whipping-top, from its shape: comp., however, W. *torbwot*; Gael. *turbaid*; Ir. *turbit*, a turbot]: a large and highly esteemed flat-fish of the genus *Rhombus* and family *Pleuronectidæ*, having the body rhomboidal; the dorsal fin commencing immediately above the upper lip, and extending almost to the tail-fin; the eyes generally on the left side. The Brill (q.v.) belongs to this genus as well as the T., and some other less important fishes. The T. attains a large size, sometimes weighing 70–90 lbs. Its form is shorter, broader, and deeper than that of almost any other flat-fish. The upper surface is brown in color, and studded with hard roundish tubercles. Like the other flat-fishes, it generally keeps close to the bottom of the sea; and it is found chiefly on banks where there is considerable depth.

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of water. Some of the banks in the German Ocean, e.g., the Dogger Bank, abound in T.; it is found also in estuaries, but less abundantly. In former times it was caught chiefly by long lines; but the greater part of the supply for the London market is now obtained by beam-trawling (see TRAWLING). Few kinds of fish are more prized for the table.—The AMERICAN or SPOTTED T. (*Bothus maculatus*) also is highly esteemed for the table: it is common on the coasts of New England and New York. It attains a weight of 20 lbs. The breadth is about one-half of the length. The upper surface is smooth, reddish gray, with large circular or oblong darker blotches and numerous white spots. The DIAMOND T. of California is *Hyopsetta guttulata*.

TURBULENT, a. *tér'bū-lěnt* [F. *turbulent*—from L. *turbulen tus*, restless, agitated—from *turbo*, I disturb: It. *turbolento*]: in violent commotion; restless; disturbed; tumultuous; producing commotion; riotous; disorderly; refractory; insubordinate. **TURBULENTLY**, ad. *-lě*. **TURBULENCE**, n. *-lěns* [F.—L], or **TUR'BULENCY**, n. *-lěn-sĭ*, a disturbed state; disorder or tumult of the passions; a disposition to resist authority, as by a mob or crowd.—**SYN.** of 'turbulence': agitation; tumult; tumultuousness; insubordination; unruliness; rioting; disturbance; sedition.

TURCISM, n. *tér'kĭzm* [see **TURK**]: the civilization or religion of the Turks.

TURCOMAN, n. *tér'kō-măn*, **TUR'COMANS**, n. plu. *-mănz*: one of a nomadic and predatory Turkish people in central Asia; also spelled **TURKOMAN**.

TUR'DIDÆ: see **MERULIDÆ**.

TUREEN, n. *tū-rěn'* [F. *terrĭne*, an earthen pan—from F. *terre*; L. *terra*, earth]: an earthen or porcelain vessel for containing soup, etc., at table.

TURENNE, *tū-rěn'*, F. *tū-rěn'*, **HENRI DE LA TOUR D'Auvergne**, *děh lá tōr dō-vairn'*, **Vicomte DE**: one of the most eminent of France's military heroes: 1611, Sep. 11—1675, July 27; b. at Sedan, dept. of Ardennes; second son of Henri, Duke of Bouillon, and of Elizabeth of Nassau, daughter of William I. of Nassau-Orange, the great assertor of the liberties of the Netherlands. T. was brought up in the Reformed faith. On the death of his father, 1623, he was sent to Holland, where, under his uncle, the celebrated Maurice (q.v.), he was initiated into the art of war. Returning to France 1630, he was favorably received by Richelieu, who gave him a commission. In 1637 he was attached to the army of Bernard of Weimar, then engaged in Lorraine; and by bringing about the capture of Landrecies, Maubeuge, and other places, including Brisach, the key of w. Germany, T. gained such repute, that on his return to Paris (1638) he had quite a triumphal reception. The victories of Route and Casale in the Italian campaign, 1639, added to his laurels; and in 1641 he was intrusted with the supreme command. The conquest of Roussillon from the Spaniards, 1642, was proof of his military genius, and he was rewarded 1643 with the baton of a marshal of France, and the chief command on the Rhine, where re-

peated reverses, a defective commissariat, and want of pay, had completely demoralized the army. Through a liberal expenditure of his own funds, and of loans obtained by him on his own security, the troops were speedily re-equipped, and their *morale* restored by a victory over the Bavarians at Rottweil (1644). In 1644 he took Philipsburg and Mainz, but the following year, May 5, he was completely routed at Marienthal, by Mercy. This disgrace was avenged by Condé at Nordlingen, Aug. 3, where Mercy was slain; and T. gloriously concluded the war on the part of France by the reconquest of the Treves electorate, the conquest of Bavaria in conjunction with the Swedes, and by a successful campaign in Flanders. In the civil wars of the Fronde (q.v.), which immediately followed, T. joined the party of the *frondeurs*, of whom his elder brother was one of the principal leaders; but after being defeated at Rethel (1615, Dec. 15), he withdrew to Flanders. On Mazarin's return from his exile at Brühl, T. joined his party, while Condé deserted to the *frondeurs*, and the two greatest generals of the period were for the first time pitted against each other. T. was uniformly victorious, though his forces were inferior in number to those of Condé, who was ultimately forced to retire from France. T. afterwards subdued the revolted cities, crossed the n. frontier, and conquered much of the Spanish Netherlands. On the outbreak of war between France and Holland 1667, Louis XIV. created T. marshal-gen. of France, and would have made him constable but for his Prot. opinions. At the king's suggestion, Bossuet composed his celebrated *Exposition de la Doctrine Chrétienne* expressly for T.'s conversion, and this, backed by the king's repeated solicitations and remonstrances, and doubtless, as Voltaire suggests, by the more efficacious promptings of ambition, had the desired effect, 1668. T.'s campaign in Holland, in which he was nominally under Louis's command, was most triumphant; and the Elector of Brandenburg, who had ventured to side with the Dutch, was pursued to Berlin (1672), and forced to beg for peace. The emperor next took up arms on behalf of Holland, and T. was transferred to the Upper Rhine. This, his last campaign, is disfigured by the unjustifiable devastation of the Palatinate, under orders from Louvois. After routing the Germans at Mülhausen and Turckheim, and forcing them across the Rhine, he was at last opposed to a worthy antagonist in Montecuculi (q.v.); but their famous passage of strategy was left unfinished, T. being killed by a cannon-ball while reconnoitering the ground at Salzbach. His grateful sovereign ordered him to be entombed at St. Denis with the kings of France. By the order of Napoleon, his remains were placed under the dome of the Invalides, at Paris, 1800, Sep. 23. T. left *Memoirs of his campaigns*.

TURF—TURGENEF.

TURF, n. *térf* [Icel. and Sw. *torf*; Dan. *tørv*; Dut. *turf*; OHG. *zurba*, turf: W. *torp*, a lump]: the grassy surface of untilled land; a detached piece of the surface of a grassy park; sod; sward; the fibrous, black, earthy substance used as fuel; peat; race-ground—hence, horse-racing (see **TURF LAWS: HORSE-RACING: HORSEMAN-, SHIP: HORSE**): V. to cover with turf or sod. **TURF'ING**, imp.: N. the operation of covering with turf. **TURFED** pp. *térft*. **TURFY**, a. *térf'í*, abounding with or resembling turf; in *slang*, given to horse-racing; sporting. **TURF'INESS**, n. *-nēs*, the state or quality of being covered with turf. **TURFEN**, a. *térf'n*, made of turf; covered with turf. **TURF'-ITE**, n. *-ít*, in *slang*, a betting-man; a frequenter of race-courses.

TURFAN, *tór-fán'*: important city in the east of E. Turkestan, on the s. slope of the Thian Shan Mts. It consists of about 6,000 houses.—T. is a name also of Eastern Turkestan itself.

TURF LAWS: the rules which govern the ancient pastime of horse-racing (q.v.). In the United Kingdom these are: 1. As to racing. The stewards or persons intrusted with the management and possession of the land for the time have a right, which is seldom enforced, to turn off any person they please from the grounds. Many of the great races are not run within a year from the time the horses are entered. The owner of a horse entered can withdraw or 'scratch' him before the race is run. When the race is run, the successful party may sue for the amount of the stakes; and if the race is not run, or cannot be run, each subscriber may sue for recovery of his contribution. If the stakes are contributed for an illegal game, it is otherwise; and before the stakes have been paid away, any contributor may sue for and recover his deposit. The stewards decide all disputes about the fairness of a race, and their award is binding: if they cannot agree, then it will fall to be decided by a jury.—2. As to wagers. By the act 8 and 9 Vict. c. 109, s. 15, all wagers were declared void, except as regards subscriptions of money or plate to be awarded to the winner of a lawful game, sport, pastime, or exercise. If one makes a wager on a race, he may retract it any time before the event comes off, and require the money, if deposited, to be repaid; and no wager can be tried in any court of law or equity, so that the winner cannot compel payment. It is merely a debt of honor.

TURGENEF, *tór-gěh-něf'* (or **TOURGUENIEFF**, *tór-ghěn-yěf'*), **IVAN SERGEIEWITCH**: Russian poet and greatest of Russian novelists: 1818, Nov. 9—1883, Sep. 3; b. in the govt. of Orel, Russia, of an old Russian family. He studied in the universities of Moscow, St. Petersburg, and Berlin. Returning home 1840, he obtained a place in the ministry of the interior, but a year later retired to private life on his estate. His first work was *Parasha*, a poem; then followed several light sketches, later collected under the title *The Papers of a Sportsman* (1852). In these T. portrays with startling realism the wretched condition of the peas-

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antry; and the little book, which was eagerly read by all classes of Russian society, even by the emperor Nicholas, exerted a sensible influence toward the emancipation of the serfs. His reputation as a faithful delineator of character and manners was much heightened by his next considerable work, *A Nest of Nobles* (1859). In *Fathers and Sons* (1862), T. described the spread of nihilistic principles—a term coined by himself. From 1863 till his death, T. resided mostly in Baden-Baden and Paris. As a novelist he holds rank with the foremost; he is the peer of Dickens and Thackeray, of Balzac and Hugo. Several sinister traits of character T. inherited from his mother: for some account of these, see *Russian Traits and Terrors*, by E. B. Lanin, chapter on *Lying* (Boston 1891). Of his selected works 12 vols. have been transl. into German. Many of his writings have been transl. into French (thence into English); a few have been transl. direct from the Russian. Among his works that have appeared in English are: *Russian Life in the Interior*; *Fathers and Sons*; *Smoke, or Life at Baden*; *Liza*; *On the Eve*; *Dimitri Rudin*; *Spring Floods*; *Virgin Soil*.—See Isaac Pavlovsky's *Souvenirs sur Tourguénieff*.

TURGENT, a. *tér'jěnt* [L. *turgens* or *turgen'tem*, swelling; *turgērě*, to swell]: swelling; tumid; protuberant. **TURGESCENT**, a. *tér-jěs'sěnt* [L. *turges'cens*, beginning to swell; *turges'cěrě*, to begin to swell]: growing large; in a swelling state. **TURGES'CENCE**, n. *-sěns*, or **TURGES'CENCY**, n. *-sěn-sě*, act of swelling; inflation; bombast.

TURGID, a. *tér'jid* [L. *turgidus*, swollen, distended—from *turgērě*, to swell; It. *turgido*]: swollen; tumid; distended beyond the natural size; puffed up; pompous; bombastic; inflated, as language. **TUR'GIDLY**, ad. *-lě*. **TUR'GIDNESS**, n. *-něs*, or **TURGIDITY**, n. *tér-jid'ě-tě*, state of being swelled; tumidness; bombast.

TURGOT, *tür-go'*, ANNE ROBERT JACQUES, Baron DE L'AULNE: French statesman and economist: 1727, May 10—1781, Mar. 18; b. Paris; descended from one of the oldest families in Normandy. T. was intended for the priesthood, but preferred law. Appointed, 1761, intendant of Limoges, he administered the affairs of the province for 13 years, introducing a more equitable administration of imposts, and abolishing the *Corvée*, or old method of repairing roads and bridges by the compulsory labor of the poor inhabitants. He exerted himself also in improving the condition of agriculture and trade, and in every possible way sought the public good. The cultivation of the potato was introduced by him into Limoges. On the death of Louis XV., a wider field opened before him. The finances were in terrible disorder, the whole social and political system of France needed regeneration and reform; and T. appeared to be the man to meet the crisis. He was first made minister of marine, afterward comptroller-gen. of France, when to fill that post was to be virtually the prime minister. In his letter to Louis XVI., he adopted, as the motto of his administration, 'no bankruptcy, no

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augmentation of imposts, no loans.' His first task was to reduce the expenditure so as to leave an annual surplus of 20 millions of francs, for reduction of the public debt. He augmented the public revenue without imposing new taxes, and he introduced exactness of payments and fidelity of engagements into all public financial operations. One of his first measures was the establishment of free trade in grain throughout the kingdom. He constantly occupied himself with the amelioration of the condition of the people. He proposed to abolish the *Corvée* in the rural districts, to free the provinces from their barriers, commerce from internal duties, trade from its shackles, and, lastly, to make the nobility and clergy contribute to the taxes in the same proportion as the third estate. He wished also, by means of provincial assemblies, to accustom the nation to public life, and prepare it for the restoration of the states-general. If the nobility and privileged classes had possessed foresight and patriotism enough to submit to his plans, France might have been spared the horrors and excesses of the Revolution. But his projects for the public good were defeated by the confederacy formed against him by nobles, courtiers, farmers of the revenue, and financiers. The king forsook him, though at the same time observing that T. and himself were the only persons who desired the welfare of the people. He retired 1776, May 12, having held office only 20 months, of which seven were spent in repressing sedition, and seven in bed while suffering from gout. It is alleged against his practical talent for statesmanship that he lacked address, and that he did not sufficiently dissemble his hatred and contempt for the cowardice and baseness of those who fattened upon the abuses that he was laboring to eradicate. After his retirement, he resumed the pursuit of poetry and literature. His Latin inscription for the portrait of Franklin is memorable: 'Eripuit cœlo fulmen, sceptrumque tyrannis.' His works are a mine of sound and original thought. His *Mémoire* on the revolutionary war in America expresses strikingly profound and original views in regard to colonies. His work on *Usury* contains almost all that is of value in Bentham's *Letters on the Usury Laws*. He held general objections to charitable institutions. He died of gout, at Paris, leaving a memory of practical sagacity, unselfish patriotism, private fidelity, and integrity in public service, which render him one of the most massive figures in moral grandeur in the 18th c. He had, as his colleague Malesherbes said of him, 'the head of Bacon, and the heart of L'Hopital.' See his Life by Foncin (1877).

TURIN, *tū'rīn* (*Augusta Taurinorum*, *Bodincomagus*, *Colonia Julia*, *Taurasia*—in Italian, *Torino*): city of n. Italy, formerly cap. of Piedmont, then of the kingdom of Italy; near the confluence of the Po and the Dora Ripaira; 45° 5' n. lat., 7° 42' e. long.; 54 m. by rail from the Mont Cenis tunnel. Its pop. at the beginning of the 19th. c. was 42,000 (see further below). T. is an old town which began to acquire importance when Amadeus V. made it the cap. of Savoy, 1418, built a castle there, and took up

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his residence there. Charles Emanuel I. enlarged the city by royal decree 1620, and it was still more enlarged 1673 and 1702. At the beginning of the 19th c., the French destroyed the ramparts of the town, converting them into public promenades. More recently the moats and fortifications have been demolished, to make way for new streets. These and other improvements have made T. one of the handsomest cities in Europe. Some of the finest of its famous squares are: Piazza San Carlo, surrounded by wide porticoes, and adorned by a fine equestrian statue (by Marochetti) of Emanuel Philibert of Savoy; Piazza Castello, also surrounded by porticoes, prolonged down Via Po to the end of Piazza Vittorio Emanuele, the finest square in Europe for size, regularity of architecture, and beauty of situation; Piazza Carlo Felice, with porticoes and a fine garden; Piazza Carlo Alberto, with an equestrian statue (also by Marochetti) of the king of that name; Piazza d'Armi, vast open space for military exercises, flanked by the old and new arsenals of the kingdom. Leading out of Piazza Vittorio Emanuele, a handsome five-arched bridge crosses the Po, begun by Napoleon I., with money from the sale of the jewels and votive offerings of the cathedral, and finished by the kings of Sardinia. Another fine bridge is that across the Dora, of a single arch, nearly straight, the work of the engineer Mosca. Among the numerous churches, the principal are the Cathedral of San Giovanni, a Gothic structure, built in the 7th c., and reconstructed 1498; San Filippo, the handsomest church in T.; La Consolata; La Gran Madre di Dio; and a Waldensian temple. On the summit of a hill near the town is La Superga, a splendid basilica, raised by Victor Amadeus to fulfil a vow, and now the mausoleum of the House of Savoy. The royal palace, designed by Castellamonte, is poor in outward appearance; the Carignano Palace is an odd building, by Guarini. Other notable buildings are: the town-hall, designed by Lanfranchi; the new univ., with 71 professorships, and (1886) 2,132 students, library of 120,000 vols., and 2,000 MSS.; the Accademia delle Scienze, with an Egyptian museum, the finest in Europe; the Seminary; the Hospital of San Giovanni. The private palaces are numerous and vast, but in a poor style of architecture. There is the Theatre Royal; the Carignano Theatre, designed by Alfieri; the Vittorio Emanuele; and many other theatres.

The industries and the trade of T. are extensive: its manufactures consist of woolen and silk fabrics, velvet hats, paper, pottery, leather, arms, and liqueurs. The people are sober, industrious, and generally thriving.—Pop. (1861) 204,715; (1881) notwithstanding the removal of the capital. 233,124—commune 252,832; (1901) 335,656.

T. was inhabited originally by the Taurinians, a tribe of Ligurians. It is mentioned in history first in the time of Hannibal, by whom it was taken and sacked, on his descent into Italy after crossing the Alps. T. became a royal colony B.C. 166, and was called by Augustus *Augusta Taurinorum*. On the fall of the empire, it went

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to the Lombards, and became the capital of one of the 30 Lombard duchies. Charlemagne made it the residence of the Duke of Susa, whose line ruled till 1032, when the House of Savoy succeeded it. The city was taken by the French 1506, and held by them nearly 60 years. They took it again 1640; and 1796 its defenses were dismantled, and united to the French empire 1800 as the dept. of the Po. In 1815 it was restored to the House of Savoy.

TURIO, n. *tū'rĭ-ō*, **TURIONES**, plu. *tū-rĭ-ō'nēz* [L. *turĭō*, the tendril or young branch of a tree]: in *bot.*, a young shoot covered with scales sent up from an underground stem, as in asparagus; the early stage of a sucker when invested by leaf-scales. **TURIONIFEROUS**, a. *-nĭf'ēr-ūs* [L. *fero*, I bear]: producing tendrils or young shoots.

TURK, n. *tĕrk* [*Tu-kin*, an old Chinese name by which the Turkish tribes were designated]: a native of *Turkey*; in a more extended sense, a member of a race (not confined to the empire of Turkey) related to the Mongols, and including the Petchenegs, Usbegs, Turcomans, etc. (see **TURKS**); from old ideas connected with the Turks, a cruel tyrannical man. **TURKISH**, a. *tĕrk'ĭsh*, pertaining to or resembling the Turks. **TURK'ISHNESS**, n. *-nēs*, the character of the Turks; **Turcism**. **TURK'S-CAP**, a handsome species of lily, the *Lilium Martāgon*. **TUR'KEY**, n. *-kĭ*, the country of the Turks; a large domestic fowl, originally from N. Amer.—so called either from the supposition that it came from Turkey, or more likely from the bright-scarlet color of the fleshy excrescences on its head (see below): **ADJ.** of or from Turkey. **TURKEY-LEATHER**, also called **Morocco-leather**, is prepared from goat-skin. **TURKEY-RED**, a fine durable red produced from madder (see below). **TURKEY-STONE**, a familiar name for the *whetslate* or *honestone*, some of the finest varieties coming from Turkey, used for sharpening cutting-instrs. and for polishing plate (see **HONE**). **TURKEY-WHEAT**, an old name for maize.

TURKESTAN.

TURKESTAN, *tôr-kës-tân'*: 'country of the Turks,' called also *Jagatai*, and by the Persians *Turan*: extensive region of central Asia, from the Caspian Sea to beyond Lob-nor (long. 110° e.), and from Siberia and Dzungaria s. to Persia, Afghanistan, and Tibet. Until recently it was supposed that the Bolor-Tagh (q.v.), a mountain chain of the first magnitude, running n. and s., divided T. into two parts. English explorers entering T. from the s., and Russians from the n., have shown that no such range exists. Its place is taken so far, however, by a lofty tableland, the Pamir steppe, which, sloping gently e. and w., separates the rivers running e. to the desert of Gobi from those which run to the Sea of Aral. It separates T. into a w. and an e. portion.

WESTERN TURKESTAN, *Great Bukharia*, or simply *Turkestan*, or *Turan*, consists of the great hollow plain of the Caspian and Aral seas, which occupies its w. and centre, and of the hilly and well-watered districts formed by the ramifications of the Thian-Shan Mts. and Hindu-Kush. The plain is composed of deserts of loose shifting sand, interspersed with oases where a subsoil of clay renders the formation of lakelets of rain possible; strips of fertile land along the banks of rivers; and occasional tracts clad with coarse thin grass: the e. districts abound in valleys of remarkable fertility. The climate varies on the plains from extreme cold to burning heat; and though in the e. highlands the cold is almost as intense in winter, the heat of summer is much less. The rivers of T. are the Syr-Daria (see SYR-DARIA) and Amu-Daria (see OXUS); the Zer-Afshan, which rises on the s. of the Asfera-tag, and flows w. 400 m., terminating in a small salt lake or marsh near Bokhara; and the Murghab, which rises in the mountains of Ghur, and, after a w.n.w. course of 450 m., loses itself in a marsh beyond Merv. The vegetable products of the country are fruits, grain, cotton, flax, hemp, and tobacco. Silk is produced in considerable amount. Forests are scarcely represented in this extensive region. Salt is abundant, large tracts of desert being strongly impregnated and even crusted over with it; and sal-ammoniac is common. Agriculture and breeding of domestic animals are occupations of the great mass of the population; but manufacturing industry also is considerable. The produce consists of cotton, silk, linen, and woollen goods, shagreen (superior to that manufactured in Europe) and other kinds of leather, paper made of raw silk, carpets, and a few sabres, knives, and rifles.

Western T. is divided into Russian T., including Khokan (q.v.), now Ferghâna, in the n. and n.e., and the Tekke Turcoman country, with Merv in the s.w., Khiva (q.v.), under Russian influence, in the w., Bokhara (q.v.) in the e. and centre; and Afghan T., including Badakshan (q.v.) and Kunduz, Balkh (q.v.), Maimaneh, Andkhui, and Sir-i-pul. The population comprises Usbegs (q.v.), the dominant race, Turcomans, Karakalpaks, Kirghis (q.v.), Sarts or Tajiks, Persians, Kiptchaks, and a few Arabs, Hindus, and Jews. Of these, the Sarts or Tajiks,

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original inhabitants of the cities, are of anc. Persian stock, and, with the Usbegs, Hindus, and Jews, form the settled population; the Persians are mostly descendants of slaves; the other races are largely nomad and predatory. For the ethnographic relations of the Turcomans, see **TURKS**. The prevalent religion is Mohammedanism, and most of the tribes are Sunnites (q.v.). A few Shiites (q.v.), Sufis, and Buddhists are also found.

T. has had an important place in Asiatic history from the very earliest times. The contests between the Iranian and Turanian races are prominent in Firdusi's sketch of the semi-mythical traditions of Persia; and the earliest light of history shows us Bactriana (Balkh) and Sogdiana (Bokhara) as well-cultivated and populous countries, generally attached to the Persian empire, and inhabited by Persians, to whom most of the prominent cities of T. owe their origin. With Persia, T. passed into the hands of the Macedonians, who made Bactria an independent Greek kingdom, while the rest was in possession of the Parthians. Under the Sassanides, the Persian boundary was again advanced to the Jaxartes; but the gradual gathering of Turkish tribes from the n.e. on the right bank of that river led to constant warfare on the frontier, which ultimately resulted in the occupation of *Mawer-ul-neher* ('the country between the rivers'—i.e., the Oxus and Jaxartes), and of Khaurezm (Khiva) by the invaders. In the 8th c. of the Christian era, the Arabs possessed themselves of T., and during the decline of the caliphate it became the seat of various minor dynasties, e.g., the Samani (q.v.) in Mawer-ul-neher, and the shahs of Khaurezm; and after a brief union with the Seljuk empire in Persia was mostly united to Khaurezm, and was with it overrun by the Mongol hordes under Genghis Khan (q.v.), on whose death it became one of the four divisions of his vast empire, and was allotted to his son Jagatai. On the decline of Jagatai's dynasty, Timûr (q.v.) rose to supreme authority in T., and in his 35 years' reign made it the centre of an immense empire, which stretched from the Hellespont to the frontiers of China, and from Moscow to the Ganges. This period was the golden age of T.; its powerful monarch was never weary of adorning its cities with the spoils of victory; colonies of learned men, skilled artisans, and all whose knowledge or abilities could be of service to his subjects, were either transferred to T. from the countries he had conquered, or induced by munificent offers to settle there; till under him and his more immediate successors, Samarkand became a focus of enlightenment and learning. But after the death of Shah Rokh, Timûr's youngest son, the empire was split into numerous fragments; and after a time a new dynasty snatched Persia from Timûr's family, while the Usbegs, under Sheibanî Khan, drove them (1500) from the country n. of the Amu-Daria; one of the expelled princes, Mirza Baber, who had ruled in Ferghâna (the s. half of Khokan), subsequently founding the 'Great Mogul' empire in Hindustan. The Usbeg empire generally included Badakhshan, Herat, and Meshed; but these

were lost on its division 1658 into various independent khanates. Khiva was conquered by Nadir Shah 1740, and Bokhara limited to the n. bank of the Amu-Daria; but the Kirghis of the Little Horde restored the independence of Khiva, which they ruled till 1792, when the present Usbeg dynasty obtained the throne; and Shah Murad (1806-22), renowned under the appellation *Beggee Jan*, effectually restored to the Bokhariot sceptre its former extensive sway. Khokan, after emancipating itself from the authority of Sheibani's successors, was incorporated with Bokhara, but afterward united with the states of Eastern T., and on their conquest by China resumed its independence. The recent history of T. records a series of wars between Bokhara and Khokan, and Bokhara and Khiva, in which the Bokhariots had generally the advantage, owing to the aid of the Turcomans of the southern desert, whom they subsidize; the raids of the Turcomans along the n. frontier of Persia; the advance of the Afghans from the s.e.; and the progress of Russian conquest from the n. and w. Between the deserts of T. and those of Persia lies a long and fertile tract from the s.e. of the Caspian to Herat, the 'key to India;' over it pass the great routes from western to eastern Asia. North of it, chiefly in the deserts, dwell the Turcomans, brigands and man-stealers, till of late constantly engaged in marauding expeditions against the northern Persians. Their atrocities far exceeded anything recorded of the African slave-trade. In 1860 the Persians marched against them, but were defeated in attempting to capture their intrenchments in a marsh. On that occasion, 15,000 Persians and 30 guns were taken by the Turcomans. In 1865 a more successful expedition proceeded against Sarakhs. In 1849 the Afghans invaded the s.e. part of T. for recovery of possessions which they claimed n. of the Hindu-Kush. In 1850 they took Balkh and Khulm, and in 1859 Kunduz, Badakhshan at the same time submitting to pay a large tribute. Subsequently, as in 1873, the Eng. and Russian governments practically recognized the claim of the Afghans to fix their frontier at the Oxus. Elsewhere the Russians seemed about to absorb all that remained of independent Turkestan: in 1864 they invaded Khokan, and took Tashkend and Khokan. A struggle followed with Bokhara. 1866, May 20, was fought the important battle of Irjar: the emir had to flee for his life, leaving his camp in the hands of the enemy. In 1868 the Russians, 8,000 men, again advanced. The troops of the emir, 40,000 men, took to flight; and a treaty was concluded by which Bokhara transferred to Russia Samarkand and all the territory n. and e. of it. Khiva still remained independent in the midst of its deserts. But early in 1873 an expedition was sent against Khiva, which fell in June of that year, after no great resistance. A great part of Khivan territory n. of the Amu-Daria was ceded to the conquerors; and after a fierce struggle 1875, 6 with the warlike inhabitants of Khokan, which is now the Russian province of Ferghâna, Russia formally annexed the whole. In 1879 the Russians unsuccessfully attacked

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the Akhal Tekke Turcomans, living on the s. edge of the Kara Kum desert, between the Caspian and Merv; but 1880-1, under Skobeleff, completely subjected the Tekkes; and Merv became Russian. In 1885 a long-contemplated commission, English and Russian, was appointed to delimit the frontier in dispute between Afghanistan and Turkestan, now Russian, especially in the steppe region between Merv and Herat; the Oxus being accepted as frontier further east. After the English Commission was on the ground, serious diplomatic difficulties arose, threatening to issue in war between England and Russia; and a battle took place between Russians and the Afghans at Penjdeh. Ultimately a frontier line was agreed on, which left Penjdeh and Pul-i-Khatun to Russia, and Meruchak and Zulfikar to Afghanistan. There is a railway from the Caspian to Askabad, on the way to Merv. —*Russian Turkestan* had 1897 more than 409,434 sq. m.: pop. (1897) 4,888,183; it was divided into the provinces of Semiretchinsk, Syr-Daria, Ferganah, Samarcand, The Steppes. The pop. consists of various races. The capital is Tashkend (pop. 1897 156,414) in Syr-Daria. Other important cities are Samarcand (pop. 1897, 54,900), Khojent (pop. 1897, 30,076), and Kokand (pop. 1897, 82,054).

EASTERN TURKESTAN, known also as *Upper Tartary*, *Chinese Turkestan*, *Little Bukharia*, and *Turfan*, is bounded n. by the Thian-Shan Mts., w. by the Pamir table-land, s. by the highlands of Tibet or Cashmere. Toward the e. it sinks to the desert plain of the Gobi, round whose w. bay it forms a vast crescent-shaped oasis 4,000 to 5,000 ft. in elevation, drained by tributaries of the Tarim. This river flows e. into the desert, and empties in the Lob-nor, after a course of 1,500 m. The Lob-nor, a lake or rather series of lakes and marshes, was visited by Col. Prejevalsky 1877. The region around it is very desolate and unattractive. The first Englishman (Shaw) who visited Eastern T. gave a very enthusiastic account of its capabilities as a field for English commerce, as it was under the late emir, Yakoob Beg (see his report 1871). He described the plains as covered with corn-fields and orchards, though their fertility depends on irrigation. Canals ramify the country, sometimes crossing one another at three levels. But large areas are very unproductive; and though there are numerous villages and towns, some of them large, the population of the country as a whole is but thin. The country produces gold and abundance of silk; and the inhabitants are skilful in making gold and silver stuffs, carpets, and linen, cotton, and silk goods. The political cap. is Kashgar; commercial cap. Yarkand. In the latter are numerous colleges and schools; in both there was formerly an active trade, with resident representatives of most of the nations of Asia. But since the reconquest of the country by China, anarchy prevails, and trade is for the time destroyed. The inhabitants speak Turkish, but are said to be of Persian descent. Little is known of Eastern T. previous to its conquest by Genghis Khan; but

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after the decay of his empire into petty states, among which are Kashgar, Yarkand, Aksu, and Khoten, the chiefs of these were constantly quarrelling with one another—a temporary peace being occasionally produced by their subjection to some powerful neighbor—till several of the leaders, with the Yarkand prince at their head, invited the Chinese to take possession of the country, and 1758 it became a province of China. In 1864, however, a mutiny among the Chinese troops induced the dispossessed native chiefs to stir up a Mohammedan insurrection. They invited a Khokan prince, Buzurg Khan, to assume the govt.; and through his lieutenant, Yakoob Beg, he dispersed the Chinese garrison left to defend the fort of Kashgar. But the lieutenant soon superseded him, and became sole emir under the title Athalik Ghazi. He possessed civil as well as military capacity, and raised the country to considerable prosperity. He sent an envoy to Calcutta 1872. But the emir's position did not secure more intimate relations. He had since 1869 successfully resisted the encroachments of Russia, but 1876 the Chinese again advanced, defeated him, and retook their old province 1877—though Kuldja, which had been taken from the rebels by Russia 1871, was retained by that country in spite of Chinese protests until 1881, when, by a treaty between Russia and China, negotiated by the Marquis Tsêng (q.v.), it was restored to China.—Pop. prob. about 600,000.—See Forsyth's *Report* (1875); *From Kulja, across the Tian Shan to Lob-nor*, by Colonel N. Prejevalsky (1879); Boulger's *Life of Yakoob Beg* (1878).

TURKEY, *tér'kî*: gallinaceous bird of the genus *Meleagris* and family *Pavonidæ*; or, according to some ornithologists, of a distinct family, *Meleagridæ*, both, however, being included by others in *Phasianidæ*. The head is bare, the neck wattled, and the bill of the male surmounted with a conical fleshy caruncle, sometimes erected, sometimes elongated and pendulous. A curious tuft of long hair springs from the base of the neck of the male, and hangs down on the breast. The bill is rather short, strong, and curved; the tail is broad and rounded, capable of being erected and spread out, as the male delights to do when he struts about in pride, with wings rubbing on the ground, uttering his loud peculiar *gobble*. The **COMMON T.** (*M. gallopavo*, a term which covers two races, *M. sylvestris*, the wild T. of the United States, and *M. mexicana*, or Mexican wild T.) is the largest of gallinaceous birds. It is now bred in nearly all civilized lands. It appears to have been introduced into Europe in the beginning of the 16th c., and in some places became naturalized. In a domesticated state, the T. varies much in plumage, but not in its wild state. The plumage of the wild T. is also richer, and its power of wing greater; but the wings even of the wild bird are short, scarcely extending beyond the base of the tail. The darkest-colored of domesticated turkeys most nearly resemble the wild T. in plumage. In its native woods it seems to attain larger size. Turkeys were formerly plentiful in the forests of the Atlantic states and as far n. as Lower Canada, but have mostly disappeared as

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cultivation has advanced, and have become rare even in the e. parts of the valley of the Mississippi, where they were formerly very numerous. The T. is found as far s. as the Isthmus of Darien, but not w. of the Rocky Mountains. It inhabits the woods of the larger islands of the W. Indies. In warm climates it is said to produce two or three broods a year; in colder countries it produces only one. The males associate in flocks of ten to one hundred, and seek their food during great part of the year apart from the females, which go about singly with their young, or associate in flocks, avoiding the old males, which are apt to attack and destroy the young. At the pairing-time, desperate combats take place among the males. Wild turkeys roost on trees. They feed on all kinds of grain, seeds, fruits, grass, insects, and even on young frogs and lizards. They make their nests on the ground, merely gathering together a few dry leaves, and often in a thicket. The eggs are usually 9 to 15 in number, sometimes 20.

Though the T. has been domesticated more than 400 years, it still shows many of its wild traits, and is more difficult to manage than ordinary poultry (see POULTRY). The hen lays 12 to 18 eggs, which are hatched in about 28 days. The chicks do not need food for 24 hours, but should then be supplied with hard-boiled eggs chopped fine, and crumbs of stale bread moistened with milk. Food should be given in small quantities, but at frequent intervals. After two weeks the food may be changed to scalded corn-meal mixed with skimmed milk, and boiled potatoes. Sour milk, a little boiled meat which has been chopped fine, and green food, as grass or cabbage, will also be beneficial. Later, cracked corn, buckwheat, and other grains may be supplied. The birds are very tender at first, and must not be allowed to leave the pen before they are two weeks old, or to roam in wet grass for two or three months longer; but from this time a large range is desirable. They must be kept free from lice, and should be provided with sheltered roosting-places. Though they do not reach maturity till the third year, a large proportion of the turkeys sold in our city markets are less than 10 months old. During the whole period of growth they should be fed regularly, and in the last 6 or 8 weeks cooked meal, corn, milk, and other fattening foods should be liberally supplied. Our domestic stock is descended from the Mexican wild T. (*M. mexicana*). There are a number of breeds, which vary considerably in size, form, hardiness, color of plumage, tendency to roam, and value for production of flesh and eggs.

The only other known species of T. is *Meleagris ocellata*, native of Central America. It is not quite so large as the Common T., and has a smaller tail. The neck is less wattled, but the head has a number of fleshy tubercles. The plumage is beautiful, rivalling that of the peacock in metallic brilliancy—blue, green, bronze, red, and golden hues being intimately and finely mingled, and forming eyes on the tail, whence the specific name.

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TURKEY, or the **OTTOMAN EMPIRE** (q.v.): domain including portions of Europe, Asia, and Africa; and consisting of Turkey Proper, which is under the direct rule of the sultan, and of several dependent and tributary states. The arrangements sanctioned by the Berlin Congress in 1878 have largely changed the size and organization of the empire. See **OTTOMAN EMPIRE—History**. This congress, which met primarily to revise the 'preliminary' treaty of San Stefano, concluded between Russia and Turkey at the close of the war of 1877-8, revolutionized the relation of the Porte to the subject Christian principalities and provinces, alienated large portions of hitherto Turkish territory, and inaugurated a new era in the history of the Ottoman empire. For the principal results of the congress's work, see the titles of the several states which they chiefly concern—**ROUMANIA: SERBIA: MONTENEGRO: BULGARIA: ETC.**—These results are here summarized.

The vassal states Roumania and Serbia, as well as Montenegro, were declared independent, and each obtained a change or extension of territory. Roumania, which had to yield up its portion of Bessarabia to Russia, received in compensation the Dobrudscha, cut off by a line from Silistria to Mangalia. Serbia was considerably extended to the south. Montenegro received an important addition to its territory, chiefly on the Albanian side, including the port of Antivari (Dulcigno, with its dist., was added 1880). What was formerly the Turkish vilayet of the Danube was, with the exception of the Dobrudscha, now Roumanian, made into the tributary but automatic principality of Bulgaria, its s. boundary being the Balkan range. A large territory s. of the Balkans was organized as the separate province of Eastern Roumelia, and, though remaining under the authority of the sultan, secured the right of having a Christian gov.gen. and administrative autonomy. It was practically united with Bulgaria after the war with Serbia, 1885. It was agreed that Herzegovina and Bosnia, excepting a small portion of the latter, should be occupied and administered by Austria-Hungary, and thus in large measure alienated from the Porte; Spizza and its sea-board, immediately n. of Antivari, was incorporated with Dalmatia; Greece was to receive additional territory—the congress recommending that the rectified frontier should extend up the Salambria river from its mouth, cross the ridge dividing ancient Thessaly from Epirus, cut off the town of Janina so as to leave it to Greece, and descend the Kalamas river to the Ionian Sea. In Crete the reformed government, promised 1868, was to be immediately and scrupulously made operative. In Asia the changes were much less: the port of Batum (henceforth to be essentially commercial), Kars, and Ardahan, with a portion of Armenia, were ceded to Russia, and Khotour, e. of Lake Van, to Persia—the Porte engaging to apply at once much-needed administrative reforms in Armenia and elsewhere. By the 'conditional convention' 1878 between T. and the United Kingdom, the Brit. govt. undertook to

defend the Porte's dominions in Asia, and received in return the right to occupy and administer Cyprus. The rectification of the Greek frontier was not arranged till 1881. After endless negotiations and procrastination, which for a while seemed almost certain to lead to war, the Porte agreed to cede, and Greece to accept, a considerable portion of territory, though less than the Congress of Berlin had recommended. The new frontier gave to Greece all Thessaly s. of the water-shed forming the n. boundary of the valley of the Salambria (anc. *Peneus*), including the towns of Larissa and Trikhala; and in Epirus follows the line of the Arta river, leaving the town of Arta to Greece. The fortifications of Prevesa were to be destroyed by the Turks, and the Gulf of Arta made neutral.

TURKEY IN EUROPE, generally hilly and undulating, is traversed by a mountain system which has its origin in the Alps, enters T. at the n.w. corner, and runs nearly parallel to the coast, under the names of the Dinaric Alps and Mt. Pindus, as far as the Greek frontier. This range sends numerous offshoots e. and w.; the great e. offshoot being the Balkan (q.v.) range, with its numerous n. and s. branches. The rivers of T. are chiefly tributaries of the Danube—the Maritza, Strumo, Vardar; the Narenta, Drin, and Voyutza.

On the high lands, the cold is excessive in winter, owing to the n.e. winds, from the bleak and icy steppes of s. Russia; and the heat of summer is almost insupportable in the w. valleys. Violent climatic change is, on the whole, the rule in European T.; but districts sheltered from the cold winds, as the Albanian valleys, have comparatively equable temperature. The soil mostly is very fertile; but the positive discouragement of industry by the oppressive system of taxation long in force has greatly hindered agricultural progress, and the most primitive implements are in common use. The cultivated products include most of those usual in central and s. Europe—maize, rice, cotton, rye, barley, and millet. The mineral products are: iron in abundance, argentiferous lead ore, copper, sulphur, salt, alum, and a little gold, but no coal. The wild animals are the wild boar, bear, wolf, wild-dog, civet, chamois, wild ox, and those others which are generally distributed in Europe. The lion formerly inhabited the Thessalian Mountains.

TURKEY IN ASIA.—This portion of the Turkish empire is more hilly than the other. The two almost parallel ranges Taurus and Anti-Taurus, the basis of its mountain system, cover almost the whole peninsula of Asia Minor or Anatolia (q.v.) with their ramifications and offshoots, forming the surface into elevated plateaux, deep valleys, and inclosed plains. From the Taurus chain, the Lebanon range proceeds s., parallel to the coast of Syria, and, diminishing in elevation in Palestine, terminates toward the Red Sea coast at Sinai. The Euphrates, Tigris, Orontes, and Kizil-Ermak are the chief rivers. On the whole, T. in Asia is ill supplied with water, and though the mountain siopes afford abundance of excellent pasture the plains,

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and many of the valleys, especially of the Euphrates, Tigris, and Jordan, are reduced by the parching droughts of summer to the condition of sandy deserts. In ancient times these now desert districts were preserved in fertility by artificial irrigation; but during the six centuries of almost constant war which convulsed this once fair region, the canals were neglected, and have, ever since the rise of the Osmanli power, remained unserviceable. Nevertheless the fertile portions produce abundance of wheat, barley, rice, maize, tobacco, hemp, flax, and cotton; the cedar, cypress, and evergreen oak flourish on the mountain slopes; the sycamore and mulberry on the lower hills; and the olive, fig, citron, orange, pomegranate, and vine on the low lands. The mineral products are iron, copper, lead, alum, silver, rock-salt, coal (in Syria), and limestone. The fauna includes the lion (e. of the Euphrates), the hyena, lynx, panther, leopard, buffalo, wild boar, wild ass, bear, wolf, jackal, jerboa, and many others; and the camel and dromedary increase the ordinary list of domestic animals.

Possessions in Africa.—Tripoli is a vilayet of the Ottoman empire. Egypt, under its hereditary khedive, is still tributary to the Porte, though of late years the relations of the tributary state to its suzerain have been gradually becoming looser, and Brit. influence has for several years been dominant in its administration. Tunis, till 1881 under Turkish suzerainty, is practically a French protectorate. See TRIPOLI: EGYPT: TUNIS: also OTTOMAN EMPIRE.

Industry and Trade.—Owing to the tenure of land in T. agriculture is in a very backward state. The greater part of the land is 'crown land,' the right to cultivate being granted on payment of certain fees, subject to a certain amount of state supervision and subject to revocation if left idle three years. A further system of levying tithes on all produce and a tax of 8 per cent. on exports from one province to another (cereals were exempted from this tax in 1893, and it is proposed ultimately to abolish it entirely) discourage the thrift and enterprise of the farmer, and as a natural result a large portion of the arable land is not cultivated, though of great natural fertility. The chief exports in order of importance are grapes, silk and cocoons, grain, cotton, mohair, opium, coffee, valonia, figs, wool, and olive oil. In the year ending 1899, Mar. 1, total imports were valued at \$129,379,284; exports excluding tobacco, \$92,098,720; principal ports, Constantinople, Trebizond, and Smyrna, the trade being chiefly with Great Britain, Austria, and France. The entrances and clearances at Turkish ports 1894-5 were 192,269 vessels of 37,618,549 tons; and the mercantile marine 1901 comprised 107 steam vessels of 58,861 tons, and 916 sailing-vessels of 179,883 tons. In 1902 there were 1,269 m. of r. r. in operation in European and 1,667 in Asiatic T.

Administration, Religion, Education.—The govt. of T. has always been a pure despotism; the constitution granted 1876 and revoked 1878 was only nominal. The

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power of the sultan (called also Padishah, Grand Seignior, Khan, and Hunkiar) is much limited by the *sheikh-ul-islam*, chief of the *Ulemas* (q. v.), who has the power of objecting to any of the sultan's decrees, and frequently exercises more authority over the people than his sovereign. The supreme head of the administration, and next in rank to the sultan, is the grand vizier (*sadri-azam*), under whom are the members of the cabinet or divan (*menasybi-divaniîc*), including the pres. of the council, the ministers of foreign affairs, of war, of the navy, of artillery, of the interior, of justice, of finances, and the other heads of administrative departments. Governmental crises are frequent, especially of late; but palace intrigues are always a chief element in the state. The governors of the *vilayets*, or provinces, are styled *valis*; each vilayet is divided into *sanjaks*, or *livas*, ruled by inferior officers; each liva containing a number of *cazas*, or districts; and each caza a number of *nahiyehs*. The provincial governors have no longer the power of life and death; and their power of practicing extortion on those under their rule has been greatly diminished. The variable imposts are still farmed; though considerable restrictions are imposed to protect the people from oppression. The established religion is Mohammedanism, but all other creeds are recognized and tolerated; and since 1856 a Mussulman has been free to change his religion at pleasure, without becoming liable, as formerly, to capital punishment. In lack of official data as to the religion of the people, it may be roughly estimated that in *European T.* about three-fifths of the inhabitants are Mohammedans—the remainder being in large part Greek and Armenian Christians. Education was long neglected; but a new system was introduced 1847; and schools for elementary instruction have since been established throughout T., and middle schools for higher education, and colleges for the teaching of medicine, agriculture, naval and military science, etc. Many wealthy Turks, however, send their sons to France or Britain to be educated. The newspapers published in T. are not all printed in Turkish: several are in Greek, French, and other languages.

Revenue and Debt.—Years before the war of 1877, the Turkish exchequer was evidently on the brink of insolvency. In 1875 a decree reduced the interest payable on the debt to one-half the proper amount; and another decree 1876 announced that no further payments would be made till the internal affairs of the empire should allow. The enormous expenditure of the war, and the loss of valuable provinces, added to the disorganization of the finances.

The first budget that admitted a deficit was that of 1874-5, where the revenue was given at \$109,604,178, and the expenditure at \$111,048,104. In 1875-6 the revenue was estimated at \$92,856,870, and the expenditure at \$112,476,321. In 1878-9 the revenue was guessed at \$68,040,000, expenditure (with part of the war expenses) \$243,000,000. In 1890 the sultan ordered the preparation of a budget for 1890-1, none having been issued since 1879. The esti-

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mates for 1897-8 made before the war with Greece showed a small surplus. The average for the three years 1892-3 to 1894-5 were receipts \$83,282,078, expenditures \$87,103,200. By the treaty of Berlin the total external debt of the empire, \$1,083,780,000 was to be capitalized, and specific portions to be assumed by Bulgaria, Montenegro, Servia, and Greece; and by arrangements, 1881, Dec., the external debt was to be reduced to about \$515,160,000, and certain revenues handed over to a European commission of liquidation. A consolidation of the various loans of the empire was effected on favorable terms 1884-88, and the total debt 1896, July 1, was \$639,158,642, besides \$138,828,615 still due on the Russian war indemnity.

Army and Navy.—The navy has almost disappeared, and not counting 21 obsolete boats, consists of (1902) 2 protected cruisers, 1 battleship, 2 torpedo gunboats and 4 torpedo boats. The army is in better condition and in 1902 its effective combatant services were: Infantry 583,200, cavalry 55,300, artillery 54,720 men and 1,356 guns. Total war strength was about 1,500,000 men.

War with Greece.—In 1896 a revolt in the island of Crete broke out, and in Feb., 1897, Greece sent troops to the island and proclaimed the union of Crete with Greece as the only solution of the difficulty. After an ineffectual protest T. gathered an army on the Thessalian frontier under command of Edhem Pasha to oppose the Greek army under Prince Constantine. War was formally declared Apr. 17, and on the same day the Turks captured Molouna Pass after a fierce resistance, Larissa on Apr. 24, and Dokomos May 18. An armistice on May 19 ended the almost uninterrupted successes of the Turks, leaving them in possession of the whole of Thessaly. Greece placed her cause in the hands of the Powers, and peace was declared—with the recession of a strip of Thessaly.

The population (est.) 1903 was:

	Area sq. m.	Pop.
In Europe.....	65,752	6,086,300
Asia —		
Asia Minor	194,389	9,355,000
Armenia	72,491	2,475,000
Mesopotamia and Syria.....	209,714	4,668,000
Arabia.....	173,700	1,000,000
Total Asia.....	650,364	17,498,000
Africa —		
Tripoli and Benghazi.....	398,900	1,300,000
Tributary States—		
Bulgaria and Eastern Roumelia	37,860	3,309,820
Samos	180	49,733
Egypt	400,000	7,770,000
Crete.....	3,326	309,260
Held by Austria.....		
Bosnia, Herzegovina, and Novibazar.....	23,570	1,591,200
Total	1,579,952	36,614,013

TURKEY BUZZARD—TURKIS.

TURKEY BUZZARD: see **VULTURE**.

TURKEY-RED: most durable, and perhaps most beautiful color yet produced on cotton; dyed by a process supposed to have been practiced in India from immemorial time. It passed thence through other parts of Asia to the countries of the Levant, and was introduced into France about the middle of the 18th c.; and into Britain (Glasgow) 1783, by a Rouen dyer named Papillon, in conjunction with George Macintosh. Papillon allowed his process to be made public 1803; and T.-R. dyeing has since been extensively carried on in Glasgow and vicinity, and in Lancashire.

There is a mode of dyeing cotton red with madder practiced by calico-printers—the cloth being previously bleached with chloride of lime—where the whole process occupies only a day or two. But in the case of T.-R., also a madder-dye, the operations are long and tedious, and the bleaching with chloride of lime especially objectionable. The theory of this process is not well understood; hence it has been found impossible materially to shorten it. The three most essential of the eight operations are the oiling, or rather the impregnation with an oleaginous soap, the mordanting with alumina, and the dyeing with madder; but it is found that, if any of the numerous dippings in the oily emulsions are left out, the color is inferior in proportion to the number of omissions. This is the least-understood part of the process, and doubtless gives the dye its rich appearance, which approaches some of the fine reds produced on wool.

Besides being largely used in its plain state, T.-R. cloth is extensively employed for handkerchiefs with white patterns produced on them by discharging the color (see **BANDANA**); and, of late years, articles of various kinds, with patterns in several colors, have been produced by ordinary calico-printing machines, where, by proper arrangements, the different colors are obtained on parts where the red color is discharged by chloride of lime.

TURKIS, n. *tér'kís*: see **TURQUOISE**.

TURKISH LANGUAGE AND LITERATURE: language and literature of one of the Turanian (q. v.) group of idioms—now usually designated as the Ural-Altaic group; chiefly divided into Eastern and Western Turkish. The Eastern is represented mainly by the Uigur (Jagatai), an idiom but recently recognized not only as belonging to the Turkic stock, but as its most ancient representative. Its forms are fuller and more pure, albeit, to some extent, harder and rougher. Its alphabet is formed from the Zabian, out of which have sprung also the Mongol and Manchu. Besides this, the Kiptchak, spoken in Kasan and Astrakhan, forms a principal branch of the E. Turkish, for which, however, little has hitherto been done philologically.

Of immensely higher importance is the Western Turkish, or language of the Osmanlis, which, through the conquests of that race, has spread far and wide over the whole of western Asia, the Levant, and parts of Europe. The Osman or W. Turkish (emphatically Turkish) is more melodious and soft than the E. Turkish, and so much mixed with foreign elements, chiefly Arabic and Persian, that, were it not for its grammar, which is purely Tatarian, it could hardly be called an original language, but rather a conglomeration of the three respective idioms. Besides, it has received large increase of words from other Asiatic and European languages, e. g., the Chinese, Greek, and Italian. It is one of the most widely spoken idioms; not only w. Asia, but even e. Europe, uses this tongue to a great extent for commercial and political transactions. The characters in which it is now written are no longer the original Uigur letters, but the Arabic, whose 28 characters have been increased by the four additional Persian characters—produced by further diacritical points—and a new one of their own, amounting in all to 33, which are written from right to left, as in all but one of the Semitic languages. But this alphabet is not suited to a language composed, as Turkish is, of elements belonging to the three great families of speech, Semitic, Indo-European, and Turanic. Neither the vowels nor the consonants are adequately represented in all cases. Occasionally, however, it is written also in Armenian characters, which render its sounds much more faithfully. There is no definite article or gender. The plural is indicated by a final *lar* or *ler*, and the cases are formed by addition of *ung*, *eh*, *i*, *den*, and *le* for gen., dat., acc., abl., and instrumental respectively; which are, in plural, affixed to the *ler* or *lar*. The adjective has no flexion, but is placed unchanged after the noun. Diminutives are formed, somewhat as in Italian, by suffixes. The comparative and superlative are formed by circumlocution. The personal pronouns are without gender, and their declension is like that of the nouns. The possessive pronouns are made by suffixes. The Turkish verb is of a very complex nature. There are seven *genera* (Active, Passive, Negative, Impossible, Causal, Reciprocal, Reflexive), all formed by certain monosyllables affixed or prefixed. The root of the verb is the

TURKISH LANGUAGE AND LITERATURE.

second person singular imperative, to which the infinitive affix *mak* or *mek* is joined. The moods and tenses are formed chiefly by addition of the respective forms of the auxiliary verb *olmak*, to be. Apart from this, there are special particles to express the optative, conjunctive, etc. Conjunctions are either formed by gerundives or possessive forms, or borrowed from Persian and Arabic. Adverbs are formed by certain suffixes. The Turkish construction is most peculiar: the genitive always precedes the nominative, and the verb always stands at the end. All this gives the Turkish style a peculiarly artificial and inverted appearance, and often a sentence cannot be in the least comprehended until it is quite finished. Oriental flourishes and allegorical figures of speech, with which T. is very lavish, do not facilitate the study of the language.

The original literature of Turkey is found in the scanty remains of the Uigur period. That remote e. branch of the Turkish family had, after their emigration from their homes, s. of Lake Baikal, to the Tangu Tagh, been foremost in the contests and migrations of central Asia, until they disappeared in the Mongol empire about 1200. They were acquainted with Chinese literature, and had adopted Buddhist doctrines to some extent, and their scanty literary relics bear traces of these influences. When the Turks, in the 11th c., began their conquest of the countries of Mohammedan Asia, they learned to appreciate the literature of Persia, then beginning to grow up in its full glory; and, ever since, Turkish literature and Turkish language have retained a strong Persian impression. Two branches of Turkish literature are usually distinguished—first, the E. or Jagataian, which flourished chiefly between Timur's and Baber's time (1400–1530). Mir Ali Shir, vizier of Sultan Hussein, is the most renowned poet of this period. He also collected the most ancient Jagatai poems. Sultan Baber, of this epoch, wrote important Memoirs of his life and time (transl. into Eng.). The other or Turkish literature, principally so called, is exceedingly rich, but hardly deserving the name of an original literature, inasmuch as it is a mere imitation of Persian and Arabic models. Of early writers, deserving special mention are Sheikhi, romantic poet and physician, and Soleyman Tchelebi. In the 16th c., the most flourishing period of Turkey, were Meshihi, the poet; Kemal Pasha Zadeh, historian and jurist. In history there are, besides annalists like Saaded-Din, historians like Mohammed Effendi. Of the same epoch is Lamii, who excelled in many branches of literature, besides being an accomplished translator of Persian poets. Fasli (d. 1563) and Baki, chief of Turkish poets (d. 1600), conclude this period, which is followed by another of great activity, but of inferior rank. To it belong Nebi, the poet; Nefi, the satirist; but above all, Hajji Khalfah (q.v.), eminent historian, geographer, and encyclopedist. Raghib Pasha stands out in the 18th c., with Saïd Rufet Effendi and a number of smaller writers. Recent literature is unimportant. The best-known Turk-

TURKMANSHAI—TURKS.

ish grammars are Davids's (Lond. 1836), Redhouse's (1846, best ed. by Wells), Kasem-Beg's (1847), and Wells's *Practical Grammar*; and Kieffer and Bianchi's, Redhouse's, and Zenker's are among the best dictionaries. For the literature, see Hammer-Purgstall, *Gesch. der Osmanischen Dichtkunst*; De Sugny, *La Muse Ottomane*; Redhouse, *The History of Turkish Poetry* (1879); and Gibb's translations of *Ottoman Poems* (1882).

TURKMANSHAI, *tórk-mán-shī'*: village of Azerbaijan, 65 m. e.s.e. from Tabriz; the place where, 1828, Feb. 22, was concluded the treaty between Persia and Russia, by which the former resigned to the latter the provinces of Erivan and Nakchevan.

TURKOIS n. *tér-koyz'*: see **TURQUOISE**.

TURKS, *térks*: numerous, important, and widely-spread family of the human race, whose members are found on the banks of the Lena in Siberia, as well as on those of the Danube and the shores of the Adriatic in Europe. The T. belong to the second of Blumenbach's five great divisions of mankind—*Mongolians*; and to the first, or *Mongolidæ*, in Dr. Latham's threefold classification. In this latter classification, the T. form a branch of the Turanian stock of Altaic Mongolidæ. Their geographical distribution, according to Latham, is as follows: '1. As a continuous population: e. and w., from the neighborhood of the Lake Baikal, 110° e. long., to the e. boundaries of the Greek and Slavonic countries of Europe, about 21° e. long.; n. and s., from the n. frontiers of Tibet and Persia, about 34° n. lat., to the country n. of Tobolsk, about 59° n. lat. 2. As an isolated population: along the lower course of the Lena and the shores of the White Sea, chiefly within the Arctic circle. 3. As portions of a mixed population in China, Tibet, Mongolia, Persia, Armenia, the Caucasian countries, Syria, Egypt, Barbary, Greece, Albania, and the Slavonic portion of Turkey in Europe.' The names Tourkoi, Turkai, and Turcæ occur in some ancient authors as applied to a Scythian people in Asiatic Sarmatia, and it is very likely that the Scythians of antiquity were allied in blood with the numerous existing Turkish tribes, if not absolutely their ancestors. The original seat of the T. was probably on the n. slopes of the Altai range, from which, while a portion emigrated into Independent Turkestan, others, going s.s.e., established themselves on the confines of the Chinese empire. Abel-Rémusat, Klaproth, Ritter, and other high authorities concur in tracing all now existing Turkish tribes to the Hiong-nu, a powerful nation who, prior to the Christian era, threatened to overrun and subjugate China, and who then occupied the whole vast region now called Mongolia, from n. China to Mt. Altai. Dr. Prichard coincides in this opinion. The Hiong-nu (or *Vile Slaves*, so called by the Chinese), indeed, for some time succeeded in establishing a kind of rule in China and even intermarried with the imperial family; but about the beginning of the Christian era, their power in China began to wane, and before the end of the 2d c. they were driven

back as far as Independent Turkestan. 'After the fall of the empire of Hiong-nu,' says Prichard, the T. 'are known in Chinese history by the name of Thu-k'iu, or Turks, and Whey-ou-eul, by Europeans written Huy-hurs, and, more correctly, Uigours. The Uigours, or Eastern Turks, whose history has been elucidated by Abel-Rémusat, are the link of connection between these more remote nations and the Seljuki and Osmanli Turks, who are known to European historians.'

After the fall of the Hiong-nu empire the tribes who composed its strength separated, some maintaining themselves in their acquired settlements, and even conquering portions of China; but by far the greater number spread w. over w. Mongolia, E. and W. Turkestan, and s. Siberia, and gradually lost their power and unity as a nation. Out of this *débris* of a fallen people arose, in the 5th c., the great empire (the empire of Kiptchak) of the Thu-k'iu, which contested the supremacy of central Asia with the Chinese on the e. and the Sassanidæ (q.v.) on the w., ultimately falling (744) before the Hœi-he, a confederation of Turkish tribes previously subject to it. The Hœi-he, attacked in the w. by the Hakas (ancestors of the present Kirghis), yielded to their assailants 848, but retained their power e. of the Bolor-tagb, and for 150 years longer ruled supreme from that range to the Hoang-ho. During the eight centuries succeeding their expulsion from China, a regular though slow progress westward had been maintained by some of the Turkish tribes, a portion of whom appear (5th c.) in s. Russia and on the n. frontier of the Byzantine empire, driving before them the kindred race of the Avars. They were found in Syria and Mesopotamia in the 7th c., and about the same time wandered into n. and e. Khorassan. But the seat of power of the Turkish race still was in central Asia, whence in the 10th c. the Seljuks (q.v.) emerged, conquering Persia, Syria, and Asia Minor, and establishing an empire which reached from Constantinople to the borders of Mongolia. The subdivision of the Seljuk empire in s.w. Asia led to its gradual absorption by the Khaurezmians in the n. and the Kurds in the w., till the irresistible tide of Mongol invasion under Genghis Khan (q.v.), rolling over central and w. Asia and e. Europe, completely overwhelmed Turkish dominancy. The great empire of Timur (q.v.) was Turk, with a strong infusion of the Mongol element, the residue of Genghis's irruption; and its destroyers, the Usbeks (q.v.), and the various other tribes—Kirghis, Kiptchaks, Turcomans, etc.—which now possess its extensive domains, also are of Turkish race. The Osmanli-Turks are descended from a portion of the Turkish tribe of the Kayi, which fled from its settlements in Khorassan before the Mongols, and took refuge with the Seljuks of Iconium. See OTTOMAN EMPIRE: SELJUKS: ETC.

The following is the enumeration of the principal Turkish tribes by Latham: '1. *Uigurs*.—On the Mongol frontier: belonging to China: the Uigurs were the first Turks that used an alphabet: little known. 2. *Turks of the Sandy*

TURKS.

Desert.—Conterminous with Mongolia and Tibet. 3. *Turks of Khoten, Kashgar, and Yarkend*. 4. *Kirghis*.—Independent Tartary: the Kirghis (q.v.) form a portion of the population of the highest table-land in Asia—perhaps in the world—Pamir and the source of the Oxus. 5. *Usbegs* (q.v.).—The Turks of Bokhara. 6. *Turcomans*.—The Persian frontier of Independent Tartary from Balkh to the Caspian: pastoral robbers. 7. *Ottoman or Osmanli*.—The Turks of the Turkish Empire. 8. *Nogays*.—The Turks of the parts between the Black Sea and the Caspian, n. of Caucasus. 9. *Turks of the Russian Empire*.—Bashkirs, Teptyars, Baraba, etc.: with all these, although the language is Turk. there is good reason to believe that the original substratum is Finn: with the Bashkirs, this is generally considered to be the case. 10. *The isolated Yakuts of the Lena*.'

In physical appearance, all these tribes, except the Ottoman T., partake more or less of the Mongolian type. They have in general a broad, flat face, with prominent cheek-bones, the head from side to side nearly equal to its length from the forehead to the occiput, nose flat, eyes small, color of the skin yellowish, straight hair, little or no beard, and stature undersized. It is among the nomad and agricultural T. that these characteristics are most prevalent, while among the more civilized they almost disappear. Prichard quotes Lieut. Wood's account of the Kirghis as a good average description of the primitive Turkish tribes: 'In stature, the Kirghis are under the middle height; of a *kyl* numbering seven men, the tallest was 5 ft. 5½ inches in height. Their countenance is disagreeable; the upper part of the nose sinks into the face, leaving the space between their deeply-seated and elongated eyes without the usual dividing ridge: the brow immediately above the eye is protuberant, but starts back more abruptly than in Europeans: their cheeks, large and bloated, look as if pieces of flesh had been daubed upon them; a slender beard covers their chin; and in those individuals who have more luxuriant hair, the beard has a natural curl. Their persons are not muscular. Their complexions are darkened by exposure to all weathers rather than by the sun. The women are rather good-looking, and of delicate form, like the Hazaras, and make good wives.' The T. of the Turkish empire, especially those of the upper classes, differ considerably from the type here described. The Ottoman T., in fact, in feature, height, and general physical structure, bear strong resemblance to other European nations. This is accounted for chiefly by the custom among them for ages of intermarrying with Circassian females.

The various Turkish tribes speak very nearly the same language; 'so much so, that the Yakut of the Icy Sea is said to be intelligible to the Turks of central Asia, and even of Constantinople.' In religion, the T. are mostly Mohammedans; but the Yakuts are Shamanists; the T. bordering on the Chinese empire are Buddhists; and those of Siberia, Christians of the Russo-Greek church.

TURK'S ISLANDS—TURMERIC.

TURK'S ISLANDS: group of small islands in the s.e. part of the Bahama chain; lat. 21° — 22° n., long. 71° — 73° w. Grand Turk, the largest, is about 100 m. n. of Hayti. The soil of these islands is sterile, and all supplies are imported. The only export is an excellent grade of salt, made by evaporating sea-water in the sun. In 1874 this export exceeded in value the imports, \$15,000. Since 1874 the islands, politically, have been controlled by Jamaica.—Pop. about 2,000, with considerable addition during the salt-making season.

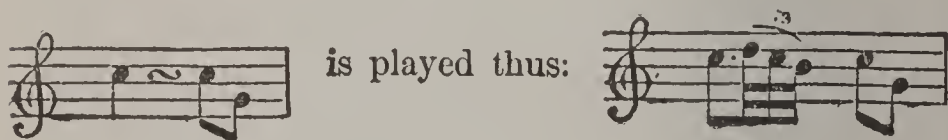
TURM, n. *term* [L. *turma*, a squadron of horse]: in *OE.*, a troop of horse.

TURMERIC, n. *tér'mër-ík* [F. *terre-mérite*; mid. L. *terra-merita*, turmeric—*lit.*, valuable earth: L. *terra*, earth, and *meritus*, pp. of *merēor*, I deserve: or from Hind. *zurd*, yellow; *mīrch*, -pepper]: plant of the genus *Curcuma* (q.v.), nat. order *Scitamineæ*, native of the E. Indies, much cultivated in India and Cochīn-China. The leaves are lanceolate, sheathing each other at the base, about 12 in. long; they spring from the crown of the root, and from their centre rises a short leafy spike, with small cream-colored flowers. The root is divided into several fleshy fingers, oblong, and as thick as a man's thumb, sometimes crooked when young, and the root then abounds in a kind of arrow-root; but in a more advanced stage it contains in large quantity a peculiar, resinous, yellow substance, used as a dye-stuff and for other purposes, and called *Turmeric*. It appears in commerce in the form of dried roots or as a powder. It depends for its value chiefly on a resinous principle, *Curcumin*, scarcely soluble in water, but easily soluble in alcohol and ether. The yellow color obtained from T. is not very durable, though it is employed as a dye for silk and wool. Chemists make much use of T. as a test for alkalis, which change its yellow color to reddish brown, as do also their carbonates and phosphates, some of the alkaloids, and boracic acid. T. test-paper is made by immersing unsized paper in tincture of T.: it is much employed in the East in medicine, as a gentle laxative, diuretic, and stimulant; also as a condiment with many kinds of food; and it is the principal ingredient in *Curry-powder*. For its cultivation T. requires rich friable soil and a situation not liable to be flooded. It is propagated by cuttings of the root, which are planted 18 to 24 in. apart: it is planted in Apr. or May, and the crop is gathered in Dec. This kind of T. is sometimes distinguished by the name **LONG T.**; and the name **ROUND T.** is given to *Kempferia pandureta*, a plant of the same order, also native of the E. Indies, whose roots are shorter and rounder, but otherwise of very similar quality: they are not nearly so much an article of commerce as the other kind, but are particularly valued for preparation of an artificial gold varnish, as they yield a better color than the long or true T. The Arabic name of T. is *Kurkum*, whence *Curcuma*. **TURMERIC PAPER**, paper stained yellow with a solution of turmeric, used as a test for free alkali, which changes its yellow to a brown.

TURMOIL—TURN.

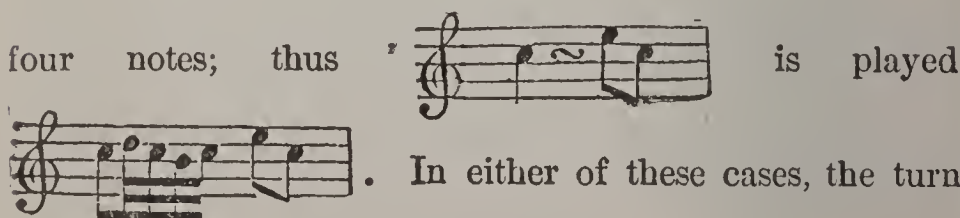
TURMOIL, n. *tér'moyl* [OF. *tremouille*, a mill-hopper, proverbial for the constant racket it keeps up: prov. F. *triboul*, great noise, confusion: OF. *trimar*, disturbance—perhaps from L. *tremēre*, to tremble]: disturbance; harassing labor; trouble and confusion; tumult. **TURMOIL**, v. *tér-moyl'*, to harass with commotion; to weary; to be disquieted. **TURMOIL'ING**, imp. **TURMOILED'**, pp. *-moyld'*.

TURN, v. *térn* [F. *tour*, a turn; *tourner*, to turn: W. *twrn*, a turn: L. *tornārē*, to turn wood; *tornus*, a lathe: Gr. *tornos*, a pair of compasses]: to cause to go round; to move round; to move from a direct course or straight line; to change the direction of; to change to an opposite direction; to change or alter; to change from one condition or state to another, as to *turn* goods into money; to be changed or transformed; to bring the inside out; to put the upper side downward; to form or shape, as by means of a lathe; to translate, as from one language to another; to transform; to cause to loathe or nauseate; to bewilder or make mad, as, it has *turned* his brain; to make giddy; to grow giddy; to expel, as, to *turn* him out of doors; to fall upon by some change; to direct, as the inclination or thoughts; to change, as a party or principle; to persuade; to change, as religion or a course of life; to revolve in the mind; to make sour, as a liquor: N. act of turning; a movement in a circular direction; a bend, as in a road; the twist of a rope round a dent or belaying-pin; a walk to and fro; a change; change of direction; opportunity; convenience, use, or purpose; that which comes to one by rotation or in the course of duty; a good or evil act; a shock or fright; form or cast, as the *turn* of a sentence: in *music*, an embellishment formed by the adjoining notes above and below combined with the principal note, and indicated by the sign ~. Thus



Should another than the prin-

cipal note follow the turn, the principal note is added before the next note is played, so as to give the turn



must be played during the time of the principal note. But

TURN.

when the sign ~ is placed above or below the principal note, the first note of the turn takes the place of the principal, which is played in combination with the others; thus



is played



TURN'ING, imp.: N. a bending course; deviation from the way or proper course; the art or operation of forming by a lathe. TURNED, pp. *térnd*. TURNER, n. *térn'ér*, a workman who forms articles with a lathe. TURN'ERY, n. *-ér-î*, the art of forming articles by means of a lathe; things made by a turner. TURN'KEY, n. [*turn*, and *key*]: one who has the charge of the keys of a prison, and opens and locks the doors. TURN'COAT, n. [*turn*, and *coat*]: one who forsakes his party or changes his principles. TURN-COCK, the official of a district or parish who has the charge of the keys of the water-plugs. TURNOVER, a kind of pie or tart made in the form of a half circle; so called because made by turning one-half of a circular crust upon the other; overthrow, as from a vehicle; an apprentice who enters the service of another master to fulfil his apprenticeship; the earnings of any business for a certain period. TURN'PIKE, n. [*turn*, and *pike*: originally a cross of two bars armed at the ends with pikes, and turning on a pin, to hinder horses from entering]: a gate or bar across a road to hinder passage till toll be paid (see HIGHWAY). TURNPIKE ROAD, a public road on which tolls (q.v.) are established. TURN-PIKE STAIR, a turret stair which winds round a central newel; a spiral or winding stair. TURNSPIT, a person who turns a spit; a variety of the dog kind, formerly so employed. TURN'STILE, a revolving frame across a footpath for the purpose of admitting foot-passengers only. TURNSTONE, a bird of the plover family. TURN-TABLE, a large revolving platform on a railway for altering the direction of carriages or locomotives. TURNING-POINT, that which decides a matter. TURN-OUT, act of coming forth; an equipage; a quitting of employment, as by a body of workmen, on account of some grievance real or alleged; the net quality of produce yielded; in *rail.*, a siding; a switch; a place for one train or car to turn out while another passes. BY TURNS, one after another; alternately. TO A TURN, exactly; perfectly. TO TAKE TURNS, to take the places of one another alternately. TO TAKE A TURN, to take a short walk. TO TURN A PENNY, to gain money by trade, however small the amount. TO TURN ABOUT, to move the face to another quarter, or in another direction. TO TURN ÅSIDE, to avert; to deviate from any course. TO TURN AWAY, to dismiss, as from service; to avert; to deviate from any course. TO TURN BACK, to turn round; to proceed in a direction contrary to that already travelled. TO TURN DOWN, to fold or double down. TO TURN IN, to fold or double; in *familiar language*, to go to bed; in *OE.*, to depart from the way; to deviate. TO TURN OFF, to dismiss

— TURNAU—TURNBULL'S BLUE.

or put away; to divert or change, as a course; to hang a criminal. To BE TURNED OF, to be advanced beyond, as to be turned of thirty. To BE TURNED OFF, to be discharged, as a workman. To TURN ON, to charge or set running. To TURN ON or UPON, to reply or retort. To TURN OUT, to drive out; to expel; to strike, as workmen; to put to pasture; to make or finish for use, as goods; to rise from bed. To TURN OVER, to transfer; to open and examine; to overset. To TURN OVER A NEW LEAF, to begin a fresh or a new course. To TURN TAIL, to retreat ignominiously. To TURN TO, to have recourse to; to apply one's attention to. To TURN THE BACK, to flee; to retreat. To TURN THE BACK UPON, to quit with contempt; to forsake. To TURN THE HEAD, to make giddy; to bewilder; to infatuate. To TURN MONEY, to employ money in business. To TURN THE SCALE, to make the balance incline to one side; to give superiority or success. To TURN THE STOMACH OF, to sicken. To TURN THE TABLES, to reverse success or superiority. To TURN UP, to bend or be doubled upward; to come to light; to happen. GOOD TURN, a beneficial act.—SYN. of 'turn, v.': to revolve; form; shape; metamorphose; transmute; alter; convert; pervert; betake; transfer; infatuate; whirl; reverse; madden; repeal; retort; hinge;—of 'turn, n.': gyration; meander; vicissitude; alteration; chance; hap; occasion; inclination; exigence; shape; manner.

TURNAU, *túr'now* (Bohem. *Turnów*): walled town of Bohemia, circle of Jung-Bunzlau; on the e. bank of the Iser, 50 m. n.e. of Prague. It has a church, built 1825, deemed one of the most beautiful in Bohemia. T. has manufactures of cotton, woollens, and particularly of artificial gems, which are exported in great quantities to the United States. In a battle here 1866, July, the Prussians defeated the Austrians.—Pop. (1881) 4,893.

TURNBULL, *térn'búl*, WILLIAM: engineer: 1800, Oct. 9—1857, Dec. 9; b. Philadelphia. He graduated at the U. S. Milit. Acad. 1819; was commissioned 2d lieut. of artil., but was on topographical duty till 1831, when he was transferred to the corps of engineers, with rank of capt.; was chief engineer in the construction of the Potomac aqueduct 1832-43; supt. of improvements in the harbors of Lakes Ontario, Erie, and Champlain 1843-46; chief topographical engineer of Gen. Scott's army in the Mexican war, for which service he was brevetted lieut.col. and col.; in charge of construction of New Orleans custom-house 1848-9; and supt. of improvement of Cape Fear river, N. C., at the time of his death. His Potomac aqueduct—the first of its kind—gave him wide fame.

TURNBULL'S BLUE: a beautiful blue color, of somewhat similar composition to Prussian blue.

TURNER, JOHN WESLEY: soldier: 1833, July 19— ———; b. Saratoga co., N. Y. He graduated at the U. S. milit. acad. 1855, and rendered gallant service both in the Seminole and civil wars; was brevetted brig.gen. and maj.gen. for services in the field during the rebellion. He resigned from the army 1871, and took residence in St. Louis, Mo.

TURNER.

TURNER, *tern'èr*, JOSEPH MALLARD WILLIAM: greatest of Brit. landscape-painters: 1775, Apr. 23—1851, Dec. 19; b. 26 Maiden Lane, Covent Garden, London; son of a barber. He received little or no education beyond a few months' schooling at New Brentford and Margate. His turn for art showed itself very early, and attracted attention and kindly assistance. In after-life T. used to express his obligation to a certain Dr. Monro, who gave him access to his excellent collection of water-color drawings, and otherwise helped and encouraged him. In 1789 he became a student at the Royal Acad., where, doubtless, he learned something; but he seems to have been indebted for his success less to formal teaching than to the tentative efforts of his own singularly original genius. In 1787, when only 12 years old, he exhibited two drawings at the Royal Acad. Again, 1790, he exhibited; and thenceforward till his death, his pictures were regularly found on the walls. His success is shown by the fact that in 1799, when only 24 years of age, he was elected an associate of the Royal Acad., and three years afterward attained the full dignity of academician. The honor was worthily bestowed, as he was already admitted to be the first landscape-painter of his time; but his appointment 1807 to the post of prof. of perspective was scarcely judicious. A man so illiterate that his simplest note included a crop of solecisms was not likely to succeed as a lecturer; and as a lecturer he failed utterly. He possessed abundant knowledge, but could not communicate it, and after a very few years he ceased from the attempt. In the exercise of his art, T. travelled much; he was frequently in Scotland, France, Switzerland, and the Rhine countries; and 1819, 29, and 40, he visited Italy. His industry was almost as great as his genius. To the exhibitions of the Royal Acad. he contributed 259 pictures; but among these many of his finest works were not included; and in another branch of art his achievements were extraordinary. In 1808 he began the publication of his famous *Liber Studiorum*, series of engravings from original designs, which ranks as one of his most important undertakings; to this is to be added his *Scenery of the Southern Coast, England and Wales, Rivers of England, Rivers of France*, etc.; and his services were continually in request as an illustrator. The illustrated edition of Rogers's *Poems* is his most celebrated work in this kind. His last years were passed at Chelsea, in a small house by the river-side. He bequeathed to the nation the noble collection of his works, and they now occupy a room in the National Gallery, a permanent monument of the power and splendor of his genius. The large fortune, about £200,000, which he had amassed by his industry and thrift, he intended to be used in founding an asylum for decayed artists; but, owing to some technical defect in his will, this purpose could not be carried out.

Of the genius of T., and the various phases through which it was developed, we cannot here attempt to treat. In Ruskin's *Modern Painters*, the subject will be found

TURNER.

thoroughly and eloquently discussed. There are lives of Turner by Walter Thornbury (1861) and by P. G. Hamerton (1879). The picture presented, especially by the former, is a somewhat dark and painful one. This creator of the beautiful on canvas is represented as coarse, sensual, sordid, avaricious; but the few friends who knew him intimately, regarded him as essentially a man of generous nature who never lost an opportunity of doing a kindness. His obvious eccentricities probably occasioned some misunderstanding of his real character. Ruskin—his intimate friend of ten years—gives him high praise. He lies buried in the crypt of St. Paul's, beside Sir Joshua Reynolds.

TURNER, PHILIP: surgeon: 1740, Feb. 25—1815, Apr. 20; b. Norwich, Conn. He was educated for a physician and surgeon by Dr. Elisha Tracy; was asst. surgeon to a provincial regt. in the old French war, at Ticonderoga, 1759; practiced at Norwich 1763-75; was surgeon-in-chief of the Conn. troops before Boston 1775; accompanied the continental army to New York, and served in the battles of Long Island and White Plains 1776; and was surgeon-gen. of the e. dept. from 1777 till near the close of the war. He settled in New York 1800, and was staff surgeon U. S. A. in the war of 1812-15.

TURNER, SAMUEL HULBEART, D.D.: 1790, Jan. 23—1861, Dec. 21; b. Philadelphia: educator. He graduated at the Univ. of Penn. 1807; was ordained deacon in the Prot. Episc. Church 1811 and priest 1814; held a charge in Chestertown, Md., 1812-17; and was supt. of the divinity school in Philadelphia 1818. The same year he was appointed prof. of historic theology in the General Theol. Seminary of the Prot. Episc. Church. He accompanied the institution in its removal to New Haven 1820, and in its return to New York 1821; and on its reorganization he was appointed prof. of biblical learning and interpretation of Holy Scriptures and held the chair till his death. He was also for some time prof. of Hebrew language and literature in Columbia College, New York.

TURNER, SHARON: Anglo-Saxon historian: 1768, Sep. 24—1847, Feb. 13; b. London. At the age of 15 he was articled to an attorney, and succeeded his master in the business before his clerkship had expired. He was successful as an attorney, but gave his leisure to historical, archæological, and philological research. After years of hard reading and patient collection of materials, he published 1799-1805. *History of the Anglo-Saxons*, 3 vols., a work, which, with all its imperfections, has given T. a permanent place in English literature. Other writings by him are: *The History of England from the Norman Conquest to 1509* (1814); *History of Henry VIII* (1826); and *Reigns of Edward VI., Mary, and Elizabeth* (1829)—all repub. under the title *History of England from the Earliest Period to the Death of Elizabeth*; *Sacred History of the World as Displayed in the Creation and Subsequent Events to the Deluge* (1832 et seq.); vol. of essays and poems; etc.

TURNER—TURNHOUT.

TURNER, THOMAS: naval officer: 1808, Dec. 23—1883, Mar. 24; b. Washington, D. C. He entered the U. S. navy as midshipman 1825; was promoted passed midshipman 1831, lieut. 1835, commander 1855, capt. 1862, commodore 1863, and rear-admiral 1868; and was retired 1870, Apr. 21. He was in the *Macedonian* exploring expedition 1837-8; the destruction of Malay pirates' towns on Sumatra 1839; commanded the *Reefer* in the attack on Tuspan, Mexico, 1847; captured two blockade runners at Vera Cruz 1860; and commanded the *New Ironsides* in the operations before Charleston 1863, Apr.—Aug. As commander of the s. Pacific squadron, 1868-70, he rendered much-needed service to the sufferers by the great earthquake in Peru.

TURNER'S FALLS: manufacturing town in Montague tp., Franklin co., Mass.; on the Connecticut river, and on the Fitchburg and the Connecticut River railroads; about 3 m. n.e. of Greenfield, the county seat, and 38 m. n. of Springfield. The falls of the river here furnish immense water-power for lumber-mills, large paper-mills, a cotton factory, foundries and machine-shops, one of the largest cutlery manufactories in the world, and a turbine-wheel factory. In its vicinity are found valuable fossil specimens.—Pop. (1890) 6,296; (1900) 6,150.

TURNER, TURNERY: see under 'TURN.

TURNHOUT, tĕrn'howt: well-built town of Belgium, province of Antwerp, 25 m. e.n.e. of Antwerp; in the dist. known as the Campine (see BELGIUM); terminus of a branch-line of the Brussels and Antwerp railway. The inhabitants manufacture ticking, and linen and lace goods, cutlery, playing-cards, paper, oil, etc. T. is historically noteworthy as the scene of two battles—the first, 1597, Jan. 22, won by the Netherlands, under Maurice, Prince of Orange, over the Spaniards; the second, 1789, Oct. 27, by the patriots, under Van der Mersch, over the Austrians.—Pop. (1880) 16,670; (1888) 17,800; (1891) 18,747.

TURNING.

TURN'ING: art of shaping wood, metal, ivory, or other hard substances into forms having a curved (generally circular or oval) transverse section; and also of engraving figures composed of curved lines on a smooth surface, by means of a machine called a *turning-lathe*. This art is of great importance and extensive application in mechanics, the most delicate articles of luxury and ornament, equally with the most ponderous machinery, being produced by it. The art of T. dates from a very early period, and Theodorus of Samos, about B.C. 560, is named by Pliny as its inventor; but long before this period, the *potter's wheel* (see **POTTERY**), earliest and simplest form of T.-machine, was in general use, as is evidenced by numerous references in the Old Test. The immense variety of work performed by T.-machines necessitates great variations in their construction; but their mode of operation is always the same, and consists in fixing the work in position by two pivots or otherwise, causing it to revolve freely round an axis of revolution, of which the two pivots are the poles, and holding a chisel or other cutting-tool so as to meet it during its revolution, taking care that the cutting-tool be held firmly and steadily, and moved about to different parts of the work till the required shape be obtained. Lathes are divided, with respect to the mode of setting them in motion, into *pole-lathes*, *foot-lathes*, *hand-wheel lathes*, and *power-lathes*: with respect to the species of work they have to perform, into *centre-lathes*, which form the outside surface, and *spindle, mandrel, or chuck lathes*, which perform hollow or inside work; though this distinction is for the most part useless, as all lathes of good construction are now fitted for both kinds of work. *Bed-lathes* are those used by turners in wood, and *bar-lathes* for the best sort of metal-work; and the small metal centre-lathe employed by watch-makers is known as a *turn-bench*.

The primitive and most simple form of lathe for wood-cutting is the pole-lathe. It consists of two planks or beams placed horizontally side by side with a narrow space between them, which, being firmly supported at a convenient height, constitute the *bed*; of two uprights or *puppets* rising from the bed, one of them stationary at the left end, and the other sliding along over the slit between the beams, and capable of being fastened at any required point by a projecting tenon and wedge beneath; of a *treadle* below and parallel to the bed; and of an elastic *pole* or *lath* (whence some derive the name lathe) fixed to the ceiling above. This form of lathe is well adapted for turning long thin cylinders of wood, the piece to be turned being held fast at each end by the conical iron or steel point projecting from the inner face of each puppet. Motion is communicated to the work by a cord fastened to the lath overhead, wound twice or thrice round the work, and then attached to the treadle below. When the workman presses his foot on the treadle, the work commences to revolve rapidly, unwinding the cord toward the treadle, and winding it up on the side next the pole, causing the latter to bend considerably. During this period, the workman has been holding his cutting-

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instrument to the work; but after the treadle has been quite pressed down, he removes his foot, and the reaction of the bent pole causes the work to revolve in an opposite direction, till the pole has straightened itself; and during this latter revolution no cutting is done. When the whole piece is to be turned, the cord must be moved from an unfinished to a finished part of the work. For the pole, an elastic steel bow and string are substituted when the work is light or fine, the cord being attached to the middle of the string, and the bow fastened to the ceiling by its centre. The advantage of the pole-lathe is, that it never acquires an impetus in the direction of the cutting motion, for whenever the pressure on the treadle is removed, the reaction of the pole takes effect; but the great waste of time during the straightening of the pole and rising of the treadle has caused the abandonment of this machine for the foot-lathe. The foot-lathe, the most common and generally useful form of lathe, differs from the former in having a *head-stock* or *fast-head* in place of the left-hand stationary puppet. This head-stock, HH (fig. 1), consists of two supports or pup-

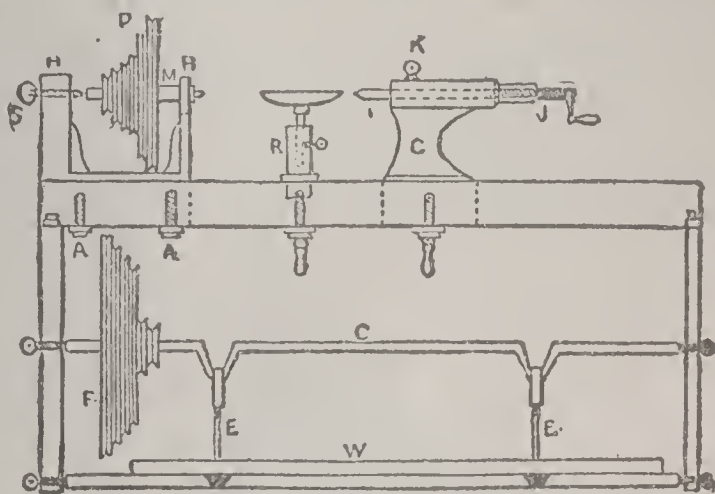


Fig. 1.

pets firmly connected at their base, and fastened at right angles to the bed by means of the screws A, A; the outer puppet is pierced for the screw S; and the inner is supplied with a steel collar, within which the mandrel, M, which carries the speed-pulleys, P, turns. The left end of the mandrel is concave, so as to allow the steel point of the screw S to fit closely. R is a *rest*, which slides along the slit between the two beams of the bed, and may be clamped at any point, and elevated or depressed as is found necessary. The rest is used by the workman for leaning his cutting-tool upon, in order to afford it greater steadiness. G is the right-hand puppet *front-head* or *tail-stock*, movable along the slit in the bed, and capable of being fastened like the rest; its point, I, can be advanced or retired as required by means of the screw J. C is the spindle, which, being connected with the treadle, W, by means of the rods or chains, E, E, turns the fly or foot wheel, F, and, by means of an endless band connecting the latter with the speed-pulleys, communicates motion to the mandrel. The pulleys on the spindle and mandrel are of different sizes, and so arranged that,

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when the endless band is placed on the left-hand pulleys, an extremely rapid motion is communicated to the mandrel, the motion being reduced more and more as the band is transferred more to the right, till, at the extreme right, the rotatory motion is much slower than that of the spindle. When the foot-lathe is required for centre-work, the inner end of the mandrel is furnished with a point similar to I; but when hollow or inside work is to be done, it must be armed with a screw, as in the figure: in this latter case, certain contrivances known as *chucks*, for holding the work, are screwed on to the end of the mandrel. Some of these most commonly used are the *screw-chuck*, which shows on its right side a flat circular surface, from the centre of which projects a large, coarse, conical screw for holding firmly any large piece of wooden work; the *hollow chuck*, a strong circular cup with perpendicular sides, into which one end of the work is firmly fastened by a mallet, or, if too small, by four screws working inward through its sides; the *drill-chuck*, of cylindrical form similar to the last, but with a square cavity for holding drills—the instrument, and not the work, being made to rotate in this instance; and the *concentric chuck*, an ingenious piece of mechanism—a flat plate with two slits almost to the centre, and in line of a diameter, within which slits works a spindle with screw-ends carrying two steel studs, whose heads project through the slits above the surface on the right side; these heads carry two curved pieces, which

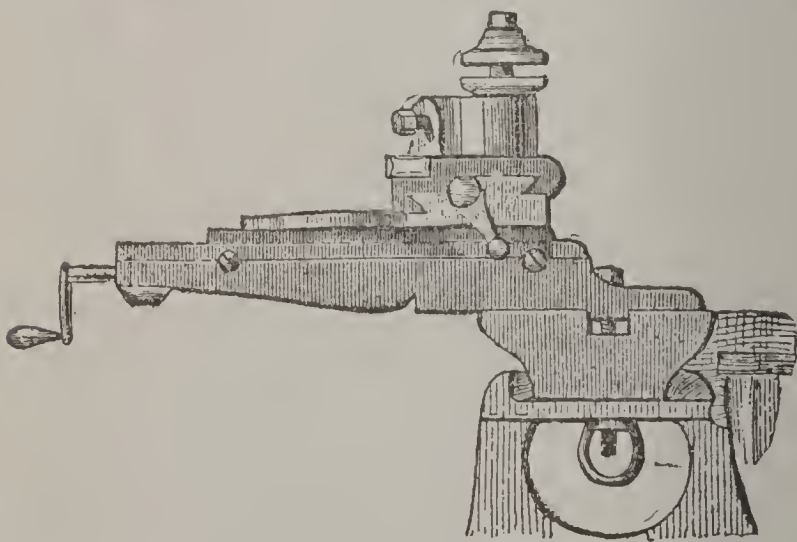


Fig. 2.—Slide-rest.

serve as clamps to hold the work; and as the spindle-screws are of the same fineness, and with right and left threads, the revolution of the spindle either removes both further from the centre, or brings both nearer to it; hence, when the studs are once set at equal distances from the centre, they always remain so, and the work may be removed and replaced without danger of destroying the adjustment. All these chucks are of metal, and are mostly employed for heavy work; turners of wood or ivory preferring wood-chucks, which can be altered as required, and secured by an iron ring round the outside, to prevent splitting. The cutting-tools employed are very various;

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gouges are used to rough out the work—if soft wood—after which chisels with a straight oblique edge are employed: the instruments for harder materials, such as ivory or bone, are smaller than the former, and have their sharp edges ‘better backed;’ for inside-work, drills are first used to make an opening, and then cutting-tools of various shapes are used, according to the form which is to be given to the interior surface. To avoid the imperfections in workmanship arising from unsteadiness of hand in the workman, the *slide-rest* (fig. 2) is employed. This valuable addition is furnished with two motions, one toward the work, the other along, parallel, or at any inclination to it, according as cylindrical or conical figures are required; there is a socket for the chisel, which is firmly held in its place by a screw; and after the slide-rest has been adjusted, the operator has only to move the rest forward or sideways, as may be required, the motions being effected by two screws and winches.

The *hand-wheel* lathe is similar to the former, but so much larger as to require two workmen, one of whom is employed in setting the instrument in motion by turning a wheel, which corresponds to the wheel F in fig. 1. The *power-lathe* is similarly set in motion by horse, water, or steam power, and is employed for heavy metal-work, as piston-rods, iron columns of various kinds, wheels, artillery, etc. This machine differs from the foot-lathe chiefly in the substitution of rack-work, and wheels and pinions, for the endless band, and for manual labor, in the various adjustments of the machine, such as in moving forward the tail-stock, etc.; and in the mandrel being supported by both puppets of the head-stock. In wood-turning, the wood, first prepared by a hatchet and rasp, must be lightly though firmly pressed against by the cutting-tool; while metal-work must be cleaned from the sand of the mold or scales of the forge, and in turning requires less care. Soft woods must be made to revolve with great rapidity; very hard woods and brass require much less velocity; wrought-iron and copper, still less; steel, a further diminution of speed; and cast-iron, the least velocity of all. After the work has been duly shaped, it requires to be polished; and this is effected while it is still in the lathe and rotating, by applying shark’s skin to wood, pumice-stone and chalk to ivory and horn, and emery, tripoli, or putty powder to metals.

Hitherto we have supposed that the axis of revolution of the work is fixed, and consequently that all work has been turned so as to present a transverse circular section; but many other forms of section may be easily obtained. The general mode of obtaining these non-circular figures is by screwing on to the mandrel an apparatus, by means of which the work can be thrown out of the centre of rotation at regular intervals; but as each different class of form requires a separate kind of apparatus, it is impossible here to describe the operations in detail. One species, however, known as *rose-engine turning*, and employed for producing involved curvilinear figures, such as appear on bank-notes and on ornamented gold, silver, or gilt work, is so peculiar

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and ingenious as to call for more special notice. In this species, the standards which support the mandrel are no longer fixed at right angles to the bed, but are capable of oscillating forward or backward in a plane parallel to the plane of rotation of the mandrel, and are so acted on by a spring that when pushed to one side they are at once restored to their former position on the pressure being withdrawn. Suppose, then, a metal wheel with its rim waved or indented, fastened concentrically on the mandrel, and the mandrel, pushed aside by a fixed steel point or roller, applied to the rim of the wheel; the reaction of the spring against the pressure of the roller will keep the latter in close contact with the waved rim throughout, and will produce a definite oscillatory movement of the mandrel, of the chuck and the work fastened on it, and consequently—the cutting or graving tool being firmly held by the slide-rest—definite deviations from a circle in the lines marked on the face of the work. The wave rimmed wheel, called a *rosette*, may be replaced by another, and that by a third, and so on till a sufficient number of different waved lines are obtained. A number of rosettes are generally strung at once on the mandrel, and the fixed guide is brought into gearing, by means of a steel band called a rubber, with one rosette after another. Similar concentric curves of greater or less perimeter are obtained by removing the slide-rest from, or bringing it nearer to, the axis of revolution.

TURNIP, n. *tér'nîp* [probably Eng. *turn*, in the sense of round, and L. *nîpus*; F. *navet*, a turnip]: biennial plant of genus *Brassica* (q.v.), with lyrate hispid leaves; the upper part of the root becoming, especially in cultivation, swollen and fleshy. It is a native of Europe and temperate parts of Asia, has been long cultivated, and is to be found in almost every garden of the temperate and cold parts of the world as a culinary esculent. It is extensively grown also in fields for feeding cattle and sheep. Its introduction into Britain as a field crop marked a great improvement in the agriculture of that country. In the United States it has not assumed great importance, as, for main products, corn, potatoes, and other crops can be grown to much greater advantage. In gardens the T. is grown for use in summer and winter. For the summer, seed is sown as soon as the ground is dry, in a rich and carefully prepared soil. About 2 lbs. of seed per acre should be sown in drills 15 in. apart. After the plants are well started, they are to be thinned to stand 3 to 5 in. apart in the rows. For the fall and winter supply, seed is to be sown in July or Aug., according to latitude. Land from which early garden crops have been removed, or which has produced a crop of grain or early potatoes, is often used for a late T. crop. The ground should be plowed, dressed with well-rotted manure or commercial fertilizer, and the surface well pulverized. When the T. is grown as a farm crop, seed is sown broadcast at the rate of 1 lb. per acre; but, to facilitate sowing, it is carefully mixed with 8 qts. of sand. Covering is done with a bush harrow or, preferably, with a roller. The T. is grown often as a 'stolen crop' between rows of corn, the seed being sown

TURNIP-CUTTER—TURNIP-FLY.

when the corn is hoed the last time. Seeding to grass is sometimes done when the T. seed is sown, in order to secure two crops with a single preparation of the soil. The principal enemy of the crop is the T.-fly (q.v.). The yield of the T. crop in field culture varies from 200 to 1,000 bushels per acre. In England the crop is fed from the land by sheep which are confined to certain portions of the field by movable fences. In the United States it is necessary to harvest the crop before sharp frosts occur. The tops should be cut off, and the bulbs stored where it is dark and cool, and covered with a little earth. From those designed for table use the central bud should be removed when they are stored, as this will greatly improve their keeping qualities. If grown in large quantities, turnips should be stored in a trench or a root cellar. Before they are fed to stock, they should be passed through a machine for cutting them (see TURNIP-CUTTER). Seed should be grown only from the finest bulbs. These should be set, early in spring, in rows 3 ft. or more apart, and $1\frac{1}{2}$ ft. apart in the row, and by cultivation and hoeing be kept free from weeds during the season. To keep the varieties pure, the different kinds, when grown for seed, should be at quite a distance from one another.

The ruta-baga, known also as the Swedish, Russian, and French T., is grown in gardens and as a field crop, has smooth leaves, is larger than the ordinary T., has a firmer texture, is more nutritious, and requires a longer season in which to mature. Seed is sometimes sown where the plants are to stand, but it is better to sow it in drills, in June or early in July, and 4 to 6 weeks later set the plants in ground prepared as for the common T., 1 ft. from each other in rows 3 ft. apart. They should be cultivated and hoed several times during the season of their growth.

The common T. contains about 92 per cent. of water, and the ruta-baga about 87 per cent. In 1890 the seed-dealers of the United States had on their lists about 50 varieties of the common T. and about 30 of the ruta-baga.

TURNIP-CUTTER: implement used for cutting turnips and other bulbs and roots for cattle. Many kinds are in use, of which perhaps the best are those having knife-edges on the surface of a cylinder or cone, which are brought to act on the turnips by turning a handle.

TURNIP-FLY: any one of several insects destructive to turnips. The name is given often to *Altica* (or *Haltica*) *nemorum*, called also TURNIP-FLEA, from its skipping or leaping powers, but which is truly a very small beetle, with long and strong hind-legs, and ample wings of shining black color, with two yellowish stripes down the wing-cases, and ochreous legs. It swarms in meadows and hedge-rows in most parts of Britain from Mar. to Oct., the larva feeding on many cruciferous plants. It often commits great ravages in turnip-fields while the turnips are very young. The female lays her eggs on the underside of the leaf, and the minute larva mines in the leaf. Its attacks may be prevented by sprinkling lime-dust over the leaves when they are wet with dew. This is to be done at

TURNIP SAWFLY—TURPENTINE.

intervals of 3 days from the time when the plants appear till they put out their rough leaves.

The TURNIP-FLY, properly so called, is *Anthomyia radicum*, dipterous insect of family *Muscidae*, and of the same genus with the Cabbage-fly and Beet-fly. It attacks the root of the turnip, as the Cabbage-fly does that of the cabbage, the larva living in the root.

TUR'NIP SAW'FLY: see SAWFLY.

TURNKEY, TURNPIKE: see under TURN.

URNSOL, or TURNSOLE, n. *térn'sól* [F. *tournesol*; It. *tornasole*, the turnsol—from F. *turner*; It. *tornare*, to turn, and L. *sol*; It. *sole*, the sun]: a plant of the genus *Heliotropium*, ord. *Boraginaceæ*: so named because its flower is supposed always to turn toward the sun; a plant, *Crotophōra tinctōria*, ord. *Euphorbiacæ*, the juice of which becomes blue on the addition of ammonia and exposure to the air; a deep purple dye obtained from this plant.

TURNSPIT, TURNSTILE, TURN-TABLE: see TURN.

TURNSTONE, *térn'stōn*: bird of the genus *Streptilas*, of the Plover family (*Charadriadæ*), distributed in almost every part of the globe. It appears in Britain, chiefly as a winter bird of passage, but breeds occasionally in the Shetlands. It frequents the sea-shore, and is named from its habit of turning over small stones with its bill in search of food. It is the only known species of its genus. The eggs, four in number, are laid on lonely rocky coasts where there is sparse vegetation. They vary greatly in color and markings, and are cunningly concealed. The whole length of the T. is rather more than eight inches. The plumage varies with the age of the bird and the season: in Aug. the plumage begins to become dull. The T. is common in N. America, and is known as beach-bird, calico-jacket, red-legs, creddock, and many other popular names.

TURPENTINE, n. *tér'pēn-tīn* [Dut. *terpentijn*; Ger. *terpentin*, turpentine—from L. *terēbin'thus*; Gr. *terēbin'thos*, the turpentine-tree: It. *terebinto*: F. *térébinthe*]: an oily resinous substance flowing naturally, or by incision, from several species of trees, as the pine, the larch, the fir, etc. The chief varieties of turpentine are *Common Turpentine*, yielded by *Pinus abies*; *Venice Turpentine*, yielded by the larch; *Bordeaux Turpentine*, yielded by *Pinus maritima*; and *Chian Turpentine*, yielded by *Pistacia lentiscus*. The Venice turpentine, regarded as the best, occurs as a clear, transparent, pale-yellow, viscous mass, of balsamic odor and acrid bitter taste, perfectly soluble in spirits of wine, and increasing in density on prolonged exposure to the air. On distilling it with water, it yields considerable essential oil, vulgarly known as *spirits of turpentine*. This oil of turpentine (which, for greater cheapness, is obtained usually from common turpentine) is, after rectification, represented by the formula $C_{10}H_{16}$, and has a sp. gr. of 0.8749, and a boiling-point of 311° F. It is colorless, transparent, has strong refractive power, strong peculiar odor, and disagreeable acrid taste. It is readily soluble in alcohol, in ether, and in the fixed and essential oils, but is

TURPENTINE.

insoluble in water, on which it floats. It is a good solvent for many substances, especially sulphur, phosphorus, cactus-chou, and the various resins; and is largely used in many departments of the arts, forming a large proportion of all oil paints. Great quantities are exported from the United States, where it is yielded mostly by the Swamp-pine.

T. is an energetic producer of Ozone (q.v.); and on keeping it for a long time in a stoppered flask, which should be occasionally shaken, the odor of ozone is very distinct on opening the vessel. Amer. or French oil of T., left in contact with water, is changed into a crystalline compound, $C_{10}H_{16}3H_2O$, called terpinhydrate. Commercial oil of T. often consists of a mixture of several isomeric hydrocarbons which act oppositely on polarized light (like the several varieties of sugar). Deville and Berthelot have ascertained that there are various modifications of which this oil is susceptible without any change in its chemical composition. Of these, *isoterebenthene* and *metaterebenthene*, differ *inter alia* in their boiling-points, and may thus be separated; *terebene* (with odor resembling that of oil of cloves) and *colophene* are obtained by acting on the oil with sulphuric acid; and *camphilene* and *terebilene* by decomposing artificial camphor (which is a combination of the oil with hydrochloric acid) by means of quicklime.

Under the influence of nitric, hydrochloric, and sulphuric acids, chlorine, etc., oil of T. yields many products of interest to the chemist, but as yet of little practical value.

Oil of T. is used in medicine, though, from its disagreeable taste, and from certain bad effects which occasionally follow its use (as strangury, bloody urine, vertigo, a species of intoxication, and an eruption on the skin), it is often supplanted by less certain remedies. It is probably the most effective remedy for expulsion of tapeworm, is nearly equally efficacious over the lumbrici or round-worms, and in the form of an injection is serviceable in the case of ascarides or thread-worms. For an adult, in a case of tapeworm or round-worm, the dose should be one ounce, combined with an equal quantity of castor-oil, or made into an emulsion with yolk of egg or mucilage. In the case of children and delicate women, it is better to try a milder vermicide (see VERMIFUGES). In doses from two drams to two ounces, and in similar combination with castor-oil, it may be given as a cathartic in obstinate constipation, especially when dependent on affections of the brain; in hysteria, epilepsy, tympanitis, passive hemorrhage, and in purpura hæmorrhagica. In small doses (10 to 20 minims), oil of T. is regarded as a diuretic; but it must be given with caution, because of its stimulating properties. It is of more service in chronic mucous discharges of the genito-urinary organs, as gleet, leucorrhœa, etc., than in dropsy. In small doses, it is often useful in chronic rheumatism and in sciatica. In the Dublin school, it has been much employed in small and repeated doses as a general stimulant in low stages of continued fever. *Turpentine Punch* has long been a favorite remedy in these cases in the Meath

Hospital (where Graves and Stokes made their reputation): it is composed of an ounce of oil of turpentine, two ounces of brandy, eight ounces of boiling water, with sufficient sugar. A third of this should be taken for a dose, and should be repeated, if necessary, every third hour. When applied externally, oil of T. is a speedy and powerful rubefacient and counter-irritant, and is beneficially used in this capacity in inflammatory attacks of the throat, chest, and abdomen. The best mode is to rub the oil by means of a bit of flannel over the part to be acted on; over this to lay three or four folds of flannel, wrung out of hot water, and over the flannel to place a dry towel: two or three such applications produce a sufficient result. There is a *Liniment of Turpentine* which is powerfully stimulating, and is applied as a dressing for extensive burns; and is used likewise, with friction, in rheumatic and neuralgic cases. There is also the *Liniment of Turpentine and Acetic Acid*, officinal representative of the *St. John Long's* liniment, an excellent counter-irritant (applied with a sponge) in pulmonary consumption and other chronic pulmonary affections. *Ointment of Turpentine* is a warm stimulating application.

It was mentioned at the beginning of this article that on distilling T. with water the oil comes over. The residue left in the retort constitutes common *resin* (or *rosin*), known also as *colophony*: see RESINS.

TURPENTINE-TREE: see PISTACHIA.

TURPETH, n. *tér'pèth*, or TURBETH, n. *tér'bèth*, and TURBITH, n. *tér'bìth* [F. *turbith*—from Pers. *turbed*, a purgative root]: the yellow basic sulphate of mercury—so called from its yellow color, which resembles the root of the *Convolvulus turpethum* or vegetable turpeth.

TURPIN, n. *tér'pîn*: same as TERRAPIN.

TURPIN, *tér'pîn*: Archbishop of Rheims, friend and companion of Charlemagne, an eye-witness of the exploits that he relates—such are the names and qualifications assumed by the author of a chronicle in Latin prose narrating the expedition of the Frankish emperor against the Saracens of Spain, and particularly the events that proceeded and followed the battle of Roncesvalles (q.v.): see also ROLAND, LEGEND OF. There is great uncertainty about the identity of Abp. T., and about the authorship of the 'History' of Charlemagne and Roland. Some writers incline to identify T. with Abp. Tilpin of Rheims (b. in the first half of the 8th c., d. 794?).—Others see evidence that the 'History' (legend) was falsely attributed to T., and was a product of the 11th c.—written, or at least partly written, by Pope Calixtus II. while he was Abp. of Rheims, about 1090. On this theory, the chronicle was made up from the purer legends and ballads of the Carolingian times. It soon acquired great popularity, was transl. into French after 1206, and was used by divers chroniclers. The chronicle is of great historic value, notwithstanding all its later embellishments; for, as one of the most ancient traditions of the time of Charlemagne, it has

TURPIS CAUSA—TURRETIN.

preserved numerous traits and details with much fidelity. The chronicle has been printed in Reuberus's edition of the *Scriptores* (Hanau 1619; Frank. 1726).

TURPIS CAUSA, *těr'pĭs kaw'zá*: phrase in law, borrowed from the Roman law, to express an immoral consideration on which some contract or obligation is founded. The rule is, that when an immoral contract is broken, no court of law will assist either party to enforce it. Thus, if one were to let lodgings to a prostitute, with the knowledge that they were to be used for her vocation, he would have no right of action to recover rent.

TURPITUDE, *n. těr'pĭ-tūd* [F. *turpitude*—from L. *turpĭtudo* or *turpĭtūdinem*, ugliness, foulness—from *turpis*, ugly, shameful]: moral baseness; extreme depravity or wickedness; moral deformity; badness.

TURQUOISE, *n. těr-koyz'* or *těr-kwoyz'*, or **TURKOIS** *n. těr-koyz'* [from *Turkey*: F. *turquoise*]: a phosphate of alumina with a little phosphate of iron and copper—a highly prized stone, taking a fine polish, and usually of a beautiful sky-blue or greenish-blue color, used in jewelry, and hitherto found only in the province of Khorassan, in Persia. It is essentially a phosphate of alumina, containing also a little oxide of iron and oxide of copper. It is harder than felspar, but softer than quartz, and has a greenish-blue color. It is opaque, or sometimes translucent at the edges: it is sometimes called Oriental T.; while the name Occidental T. is given to a substance of similar color, found near Simon, in Languedoc, said to be merely bone colored with phosphate of iron. It is spelled also **TURKIS**, *těr'kĭs*.

TURRET, *n. tūr'rĕt* [L. *turris*, a tower: OF. *tourette*, dim. of F. *tour*, a tower: W. *twred*, a turret—from *tior*, a tower]: a small tower, often crowning the angle of a wall, etc.; in *anc. warfare*, a movable edifice of wood used in attacking a fortified place. **TUR'RETED**, *a. furnished with turrets*; formed like a tower. **TURRICULATED**, *a. tūr-rik'-ū-lā-tĕd*, or **TURRICULATE**, *a. -ū-lāt*, furnished with, or having little towers or turrets. **TURRILITE**, *n. tūr'rĭ-lĭt* [L. *turris*, a tower, and Gr. *lithos*, a stone]: in *geol.*, a genus of chambered shells belonging to the ammonite family, and characterized by their straight, spiral, turreted appearance.

TURRETIN, *tŭ-rĕh-tāng'* (or **TURRETINI**, *tŭr-rŭ-tĕ'nĕ*), **FRANÇOIS**: Calvinist theologian: 1623–87; b. Geneva; son of Bénédict T. (1588–1631), Calvinist pastor and theologian. T. made his theological studies in Geneva, Leyden, Paris, Montauban, and Nîmes; settled in Geneva as pastor of an Italian Calvinist chh.; became prof. of theology in Geneva 1653. He was sternly and uncompromisingly rigid in his theology and in his terms of church-fellowship, and was one of the authors of the *Helvetic Consensus*. His influence on theological opinion in his day was very great. His chief work was *Institutio Theologiæ Elencticæ* (3 vols. Geneva 1688; reprinted Edinburgh 1847–8). This closely reasoned work was, until the middle of the 19th c., of very high authority among Calvinistic scholars; and is still of value as a philosophical memorial.

TURRETIN—TURRET-SHIP.

TURRETIN' (or **TURRETINI**), **JEAN ALPHONSE**: liberal Calvinist theologian: 1674, Aug. 24,—1737, May 1; b. Geneva; son of **FRANÇOIS T.** (q.v.). He studied theology in Geneva, Leyden, Oxford, and Cambridge; became pastor of the Italian congregation at Geneva, and (1697) prof. of chh. hist., and prof. of theology 1705. He labored to temper the stern orthodoxy of Geneva and to bring about a union of the Lutheran and Calvinist churches. He procured the abolition of enforced subscription to the *Helvetic Consensus*, and in his efforts for union of churches succeeded in inducing his fellow-Calvinists to offer to Lutherans admission to the communion in Reformed churches. On the subject of union he wrote *Nubes Testium de . . . instituenda inter Protestantes Concordia*; two vols. on theology, *Cogitationes et Dissertationes Theol.*; and two commentaries on portions of the New Testament.

TURRET-SHIP, or **MONITOR**: iron-clad ship of war, with low sides, and one or more heavily armored revolving turrets within which are mounted guns of great size. The efficiency of this type of ship lies in the possibility of securing a low freeboard and of heavily armoring the small turrets. Thus there is little exposed to be hit, and that little is so restricted in area that it can be heavily protected. The circular shape of the turrets gives also a deflective effect. The revolving turret as an appliance in naval warfare is of disputed invention. In this country John Ericsson is generally considered the inventor of the system as applied in the monitor class of ships. Theodore R. Timby, native of N. Y., has claimed the invention; and he eventually secured a patent 1863. Not far from this date a similar patent was issued in England to Capt. Cowper Phipps Coles, of the Brit. navy. Capt. Coles perished 1870, Sep., in the capsizing of his turret-ship, the *Captain*, with 600 souls on board, in the Bay of Biscay.

There are two systems of revolving turrets, differing in the method of support. In the American system, as used in the early monitors, the entire turret, with its guns, men, and all, was carried in action by a central spindle extending down to the keel of the vessel. In the English system, now the approved one, the turret is carried by peripheral, slightly coned rollers. These run upon a circular track or bed some distance below the deck, and the bottom of the turret rests on them. A set of rollers with vertical axes bear against the lower periphery to keep the turret from lateral displacement. A species of flange of leather, India-rubber, or some flexible material, is used to exclude water, and prevent it from entering between the turret sides and the aperture in the deck.

In the old days of muzzle-loaders, the guns were run in after each shot, the port-holes were closed, and the guns were loaded. Heavy swinging stoppers were used to close the openings. They were then opened, and the guns were run out and fired.

The modern revolving turret, of which a typical one is here described, is an amplification of the ideas crudely expressed in the original structure. The modern guns are

TURRET-SHIP.

breech-loading and very much longer than the old type. They are mounted on a special carriage, which really represents a slide and bed plate. They protrude for about half their length from the turret, and are never withdrawn, as there would be no room. The recoil is received by some type of buffer, the hydraulic type being much approved. Two guns is a usual number for a single turret, placed parallel and pointing in the same direction. Their elevation is determined by hydraulic power, a ram acting on their breech to raise or lower it. The ammunition is brought up by a mechanical or hydraulic hoist from the hold. On the outer and lower periphery of the turret is a set of cogs, and with these a massive spur-gear engages, worked by a special turret-turning engine. On top of the turret is the conning-tower: this is a small turret in which two or three officers can be accommodated. It has small sighting or peep holes, and, like the turret below, is heavily armored. Over the guns is the firing officer's position. He looks out of a small cross-shaped opening which acts as a rear-sight. Forward on the turret top is the fore-sight. Near him are various speaking-tubes, electric push-buttons, electric gear for controlling the steering-engines, and apparatus for controlling or directing the elevation of the gun and the rotation of the turret. A few officers in the turret have the whole ship under absolute control. In an engagement the ship would be fought from the conning-tower; the guns would be aimed and fired; then the turret would be turned to present the unperforated side to the enemy while the guns were being loaded. In double-turret ships inter-communication between the two turrets is provided for.

The problem of introducing hydraulic power into a revolving turret has been very ingeniously met by the use of a hollow central spindle, which is fixed, and about which the turret rotates. The water is introduced through this, and is taken from it by an encircling collar which turns around it with the motion of the turret.

The *Florida*, launched in 1901, has a length over all of 243 ft.; on the water line, 225 ft.; maximum beam, 50 ft.; depth amidships, 14 ft.; draught, 12 ft. 6 in.; displacement 3,200 tons. Her twin screws are driven by 2,400 horsepower engines and makes 12 knots an hour. She has a complete machine shop in her interior, where it is possible to make all ordinary repairs without taking her to a navy yard. She is equipped with 12-in. barbettes and 12-in. Hichborn inclined turrets. Her armament consists of two 12-in. guns in a single balanced turret, four 4-in. rapid fire rifles, three 6-pounders and four automatic 1-pounders. Her steel hull is protected by a continuous belt of armor, which is $5\frac{1}{2}$ in. thick 3 ft. below the water line and gradually increases in thickness to the height of the main deck and abreast of the boilers, where it is 1 ft. thick. The *Arkansas*, *Nevada* and *Wyoming* are ships of same class and construction.

See ARMOR-PLATES: NAVIES, MODERN: UNITED STATES NAVY: BRITISH NAVY.

TURRITELLIDÆ—TURTLE.

TURRITELLIDÆ, *tér-î-tél'î-dē*: family of gasteropodous mollusks, having a much-elongated spiral shell, the lower spires remarkably separated. The name Turret-shell is often given to them.

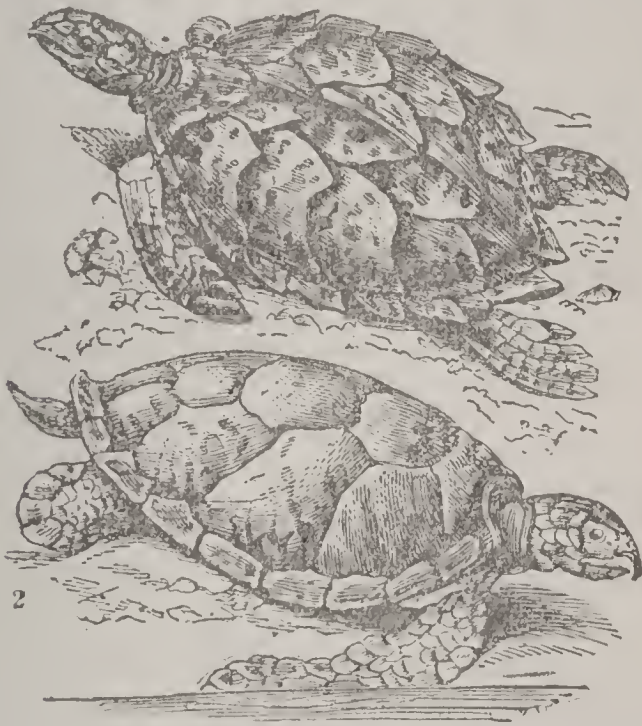
TURTLE, n. *tér'tl* [It. *tortora*, *tortola*; L. *turtur*, a turtle-dove, the bird that cries *tur*, *tur*]: the Turtle-dove (q.v.), a species of pigeon noted for the constancy of its affection; the large edible sea-tortoise—called also the green turtle (see below). **TURTLE-SHELL**, the name of a shell, a beautiful species of *murex*; also tortoise-shell. **TURTLE-SOUP**, a soup made with the edible turtle; the flesh of the edible turtle added to an ordinary soup-stock. **TURTLE-STONES**, in *geol.*, flattened nodules of calcareous clay, iron-stone, or other matter, internally divided into numerous angular compartments, often arranged in lines or bands, and generally containing some central organic nucleus, round which the matter has aggregated; called also *septaria*.

TUR'TLE: popular name of any chelonian reptile. The marine turtles have a rather flat carapace, and fin-like paddles instead of legs, suited for swimming, and not for walking. The fore-limbs are much longer than the hind-limbs. The toes are not all furnished with nails; in some species there is only one on each foot, in others there are two. Although turtles lay their eggs on the beach, they seldom visit the shore for any other purpose. They deposit their eggs in holes, which they scoop in the sand with their hind-feet. The eggs are numerous, 150 to 200 often being deposited at a time; and the T. lays several times a year. The young, soon after being hatched, make their way through the sand which covers them, and immediately betake themselves to the water. The eggs are hatched by the heat of the sand alone, and the young receive no attention from their parents. Turtles crawl slowly and awkwardly on the shore; but their movements in water are comparatively quick, and even graceful. Some of the species feed entirely on grass-wrack and seaweeds, which their powerful, hard, and sharp-edged jaws cut with great ease: others prey on crustaceans, mollusks, and fishes. Their jaws are powerful enough to crush very large shells, and the carnivorous turtles are in general more rapid in their movements than the others. The flesh of those which subsist on animal food is musky and unpleasant; but that of the species whose food is vegetable is much esteemed. In many tropical countries, turtles, after being captured, are kept in inclosures to which the tide has access, to be killed when they are wanted. They are capable of subsisting long without food, and are exported alive from the W. Indies, to supply the tables of the wealthy in other lands. In tropical countries, turtles are often very cheap. Their eggs are esteemed for food in the countries where they are found, and are sought by probing the sand with a light stiff cane in places known to be frequented by turtles. Turtles are easily taken when they come ashore for laying their eggs; and one after another may be turned on its back—in which position it is helpless, and cannot make its escape—till a sufficient number is secured. They are also.

TURTLE.

however, taken in the sea, being cautiously approached by boats when resting, or apparently sleeping, at the surface, or by divers when descried at the bottom in their feeding-grounds. A small harpoon is used, or a rope is thrown over the head of the turtle. Turtles are sometimes pursued by boats in shallow parts of the sea until they are exhausted, the clearness of the water permitting them to be seen even when they dive; and when the boat gets near enough, a man leaps overboard, and seizes the T., clinging with both hands to the shell. It is said that at Mozambique a species of sucking-fish (*Echineis*) is used for catching turtles, a cord being attached to the fish, which is allowed to swim away in the sea, and is sure to fasten itself firmly to the first T. it meets.

The most esteemed T. of the W. Indies is the GREEN T. (*Chelonia midas*), the kind exported for aldermanic and other feasts. The Green T. attains great size, being sometimes six or seven ft. in length, and weighing 700 or 800 lbs. The plates of its carapace do not overlap one another; the central ones are almost regular hexagons. The popular name is derived from the color of the fat, so much prized



1, Hawkbill Turtle (*Eretmochelys imbricata*); 2, Green Turtle (*Chelonia midas*).

by epicures.—Another excellent species of T. is the EDIBLE T. (*Chelonia virgata*) of the Pacific, frequently four or five ft. long.—The HAWKBILL T. (*Eretmochelys imbricata*), found in warmer parts of the Atlantic, in the Indian Ocean, and in the Red Sea, is particularly valuable, as yielding the best Tortoise-shell (q.v.). It is one of those turtles which have the plates of the carapace imbricated, or overlapping one another like tiles. Its flesh, though not so much esteemed as that of the Green T., is good food; its eggs also are very good.—There are other turtles, having the head of a larger size, and the jaws curved toward one an-

TURTLE-DOVE.

other at the extremity: of these one is the **LOGGERHEAD T.** (*Thalassochelys caouana*), native of warmer parts of the Atlantic. Others, again, have the carapace and plastron not hard, but leathery, and sometimes soft enough to yield to the pressure of the finger. One of these is the **CORIA-CEOUS T.** (*Sphargis coriacea*) of the Mediterranean and Atlantic: it attains a size even greater than any of the species above described, but its flesh is coarse and unpleasant.

The French, encouraged by their success in pisciculture, have attempted to introduce the Green T. on the s. coasts of France. There has not yet been time to prove the success of the experiment.

Of the aquatic and carnivorous Soft-shelled Turtles, a family found in the Mississippi valley, the Leather T. alone has the edge of the upper jaw serrate behind; the Common Soft-shelled T. and a Tenn. species have the feet spotted, while these are white in *A. ferox*. The family of Snapping Turtles includes the common one (*Chelydra serpentina*), from Canada to Ecuador, and the Alligator Snapper, of the Gulf states and n. to Wis., 40 in. or more in length. The Box T. family (unfortunately named, since it does not include the Common Box T. of dry woods, N. Y. to Mo. and s., placed in the next family) is represented by the Mud T., head with light dots, found from N. Y. to Fla., and the Musk T., w. to Ill., odor strong, and neck with two yellow stripes; also *A. carinatus* of the great valley, with neck unstriped, shell-plates with black radiating lines; in these last two, the shell cannot be closed. Of the Pond Turtles, *Emydidae*, are the Map T. and another species similar, Le Sueur's, western, both with reticulated yellow markings; the edible Salt-marsh or Diamond-back, plates usually with concentric dark stripes; the Red-bellied Terrapin, N. J. to Va.; the Hieroglyphic Terrapin, with jaws not serrated, as in the last; the Yellow-bellied Terrapin of the Mississippi valley, the plastron with large black blotches; the western Elegant T., yellow beneath, with a blotch on each plate; the Rough T., with wrinkled carapace. Va. to Fla.; the common Painted T., marginal plates with bright red; the eastern Wood Tortoise, shell with both concentric and radiating black lines; the abundant Speckled Tortoise, black with orange spots; also 3 or 4 other species. Of the Land Tortoises, *Testudinidae*, with fingers and toes bound together by integument, the herbivorous Gopher Turtle is found in the s. states, and n. to N. C. in pine barrens.

TUR'TLE-DOVE, or **TUR'TLE**: bird of the genus *Turtur*, family *Columbidae*, having the bill more slender than pigeons, the tip of the upper mandible slightly bent down. They are also more slender and elegant in form than pigeons, and generally smaller; the wings are longer and more pointed; and the tail is longer, rounded, or slightly graduated. There are numerous species, natives of warm climates. Their soft and gentle, yet loud, *cooing* has attracted attention even more than their beauty, and made them a favorite subject of allusion in poetry. *T. risorius*, the most common species in Palestine, and prob-

TUSCALOOSA—TUSCANY.

ably the one intended in the Song of Solomon, is about ten inches in entire length, with a short tail; the general color gray tinged with red; the upper parts greenish brown, with a black collar on the back of the neck. It is often kept in confinement, and becomes very tame.—Very similar in size and form is the COMMON TURTLE-DOVE (*T. communis*), native of almost all the warmer parts of the old world, a summer visitant of s. Europe and of s.e. England. The tail is long and much rounded; the plumage soft and without gloss, exhibiting finely mingled tints of gray and brown; the crown of the head bluish; all the tail-feathers tipped with white; a black patch on each side of the neck. Other species of T.-D., from different parts of the world, as well as these, are frequently kept in confinement, and are very gentle though not very intelligent pets: their cooing resounds through a whole house.

TUSCALOOSA, *tūs-ka-ló'sa*: city, cap. of Tuscaloosa co., Ala.; at head of navigation on Black Warrior river, and on the Alabama and Great Southern railroad; 55 m. s.w. of Birmingham, 75 m. n.n.w. of Selma. It is in a cotton-growing and coal region; and contains the Univ. of Ala., State Lunatic Asylum, Alabama Central Female College, Tuscaloosa Female College, Ursuline convent; 3 nat. banks (cap. \$220,000), 1 private bank; and 3 daily and 3 weekly newspapers. Its manufactures comprise cotton and woolen goods, leather, foundry products, and boots and shoes.—T. was the cap. of Ala. 1826-46.—Pop. (1880) 2,418; (1890) 4,215; (1900) 5,094.

TUSCAN, a. *tūs'kăn*: of or pertaining to *Tuscany*, in Italy—applied to the simplest of the five classic orders of architecture, a Roman modification of the Doric which allows no ornaments or fluting (see ORDER—in Arch.): N. inhabitant or native of Tuscany; a fine kind of straw-plait, made in Tuscany, used for hats, etc.

TUSCANY, *tūs'ka-nĩ*: formerly a sovereign grand duchy in w. Italy, mostly but not wholly s. and w. of the Apennines; lat. 42° 20'—44° 10' n., and long. 10° 15'—12° 20' e.; 8,440 sq. m. Pop. (1860, the date of its annexation to Sardinia) 1,800,000; (1901) 2,549,142. The n. and n.e. of country is covered with mountains, whence numerous rivers and streams flow down to the sea, the most important rivers being the Arno (q.v.), the Serchio, and the Ombrone. This dist. is also the source of the Tiber (q.v.). The rest of T. is an undulating region of hills and dales, except the coasts, which are flat and marshy. Of these marsh-lands the largest is (or was) the *Maremma* (q.v.). The principal crops are maize, wheat, rye, and barley. Wine and oil also are abundantly produced. Mules, cattle, and sheep are reared in great numbers; there are flourishing manufactures of silks, woolens, and straw (for hats), and considerable trade in articles in marble, alabaster, porcelain, coral, wax, etc. T., as now a *compartimento* of the kingdom of Italy, comprises the 8 administrative provinces of Arezzo, Firenze, Grosseto, Livorno, Lucca, Massa e Carrara, Pisa, and Siena.—For the anc. history of T., see

TUSCARORAS—TUSCULUM.

ETRURIA: for its mediæval history, FLORENCE. It is to be added only that modern T. was constituted in its present dimensions first 1569, when Cosmo de' Medici became Grand Duke of T. The national assembly of T., 1860, Aug. 16, pronounced the deposition of the reigning dynasty; and four days later declared for annexation to Sardinia.

TUSCARORAS, *tūs-ka-rō'raz*: tribe of N. Amer. Indians, who, at the settlement of N. C., had 15 towns on the Tar and Neuse rivers, and 1,200 warriors. In 1711 they began a war with the settlers, and, after a series of savage encounters, were defeated, and joined the Iroquois in N. Y., where they became allies of the English, and where some families of them still reside on an Indian reservation in the w. part of the state.

TUSCULUM, *tūs'kū-lūm*: anciently a city of Latium, about 15 m. s. of Rome, near the site of the modern Frascati (q.v.), on a ridge of hills known as the *Colles Tusculani*, and forming part of the Alban range. It is not to be inferred from its name (as Festus infers *s. v. Tuscos*) that it had any connection with the Etruscans. Mythically it derived its origin from Telegonus and Circe; but we catch the first certain glimpse of its historical existence toward the close of the regal period at Rome. Then, however, it appears in high prosperity and power; therefore its beginnings are probably remote. Octavius Mamilius, ruler of T., foremost prince in Latium, married a daughter of Tarquin the Proud (see TARQUINIUS), and was conspicuous in the last of the great struggles of the banished tyrant to regain his kingdom. On that occasion the Latins were so thoroughly defeated (see REGILLUS, LAKE) that they were fain to enter into an alliance with the victor, and ever afterward—except in the single instance of the great Latin war, B.C. 340–338—remained steady in their fidelity to Rome. As early as B.C. 378, the inhabitants of T. received the Roman franchise; and among its many distinguished *gentes* was the Porcian, which produced two famous men of a thoroughly 'Roman' stamp, Cato *Major* and Cato *Minor*. Toward the close of the republic, T. became a favorite country residence of the wealthy Romans. Lucullus had a villa here (with parks and gardens extending n. for miles); so had Cato, Brutus, Hortensius, Crassus, Cæsar, and Cicero. The villa (*Tusculanum*, Tusculum House) of the great orator Cicero is peculiarly memorable as the place where he composed many of his philosophical works, particularly those charming dialogues (*Tusculanæ Disputationes*) named from it. Long after the Western Empire had fallen, T. continued to flourish. As late as the 12th c., the ancient city continued entire; but 1191 it was stormed by the Romans (between whom and the Tusculans there had long been deadly feud), and razed to the ground. It never recovered from this blow; but lower down there arose as from its ruins the town of Frascati (q.v.). Many fine remains of anc. T. have been dug up in recent times, remarkable among which are the amphitheatre, theatre, and city walls.

TUSH—TUSSILAGO.

TUSH, int. *tŭsh* [imitative of a blurt with the lips: Fris. *twoy*; Dan *twi*, interjection when one spits with disgust: Low Ger. *tuss*, hush]: an interjection to check or rebuke; a sound expressing contempt; be silent.

TUSH, n. *tŭsh* [a form of **TUSK**, which see]: in *OE.*, a pointed tooth; a tusk. **TUSHED**, a. *tŭsht*, tusked.

TUSK, n. *tŭsk* [AS. *tusc*, a grinder: Fris. *tosch*, a tooth: Gael. *tosg*, a tusk]: the long pointed tooth on each side of the upper jaw of certain animals, as the elephant and wild boar. **TUSKED**, a. *tŭskt*, or **TUSKY**, a. *tŭs'kŭ*, furnished with tusks. **TUS'KER**, n. *tŭs'kér*, an elephant with full-sized tusks.

TUSKEGEE INSTITUTE: see **WASHINGTON, BOOK-ER T.**

TUSSAC-GRASS, n. *tŭs'săk-grăs* [Gael. *dos*, a tuft; *dos-ach*, tufted—*lit.*, the grass that grows in tufts (see **TUS-SOCK**): large, hardy, coarse, but nourishing grass (*Dactylis cæspitosa*), of the same genus with the Cock's-foot Grass of Britain, native of the Falkland Islands, remarkable for forming great tufts, sometimes five or six ft. high, the long tapering leaves hanging over in graceful curves, five to eight ft. long, and an inch broad at the base. It is, however, sufficiently delicate to be very good food for horses and cattle; and, the attention of Brit. farmers having been called to it, it has been tried with much success in the Hebrides, Orkney Islands, and in several similar localities. The inner part of the stem, a little above the root, is soft, crisp, flavored like a hazel-nut, and often eaten by the inhabitants of the Falkland Islands. The young shoots are boiled and eaten as asparagus.—Of the same genus is Orchard Grass (*D. glomerata*), naturalized in the United States from Europe, and cultivated because it can thrive in the shade.

TUSSEH, n. *tŭs'sêh* [native Indian name]: the silk spun by the Tusseh silkworm. The centres of the traffic are in Bengal, the central provinces, Berar, and the Nizam's country: see **SILK**.

TUSSICULAR, a. *tŭs-sŭk'ŭ-lér* [L. *tussicŭlāris*, pertaining to a cough—from *tussis*, a cough]: pertaining to, or good for, a cough.

TUSSILAGO, *tŭs-ŭ-lă'gô*: genus of plants of the nat. order *Compositæ*, sub-order *Corymbifera*, having bracts with a membranous edge, naked receptacle, hairy pappus; the florets of the ray pistilliferous, in many rows, tongue-shaped; those of the disk perfect, few. *T. Farfara*, sometimes called **COLT'S-FOOT**, the only British species, has become thoroughly naturalized in New England, N. Y., and Penn., where it is found in wet places. It has single-flowered scaly scapes, appearing before the leaves in early spring, the flowers yellow, both disk and ray; the leaves heart-shaped, angular, downy beneath. The leaves have a somewhat glutinous and subacrid taste, and are used for relief of asthmas and troublesome coughs, either in the form of a decoction, or smoked. They have been used with advantage in scrofula.—Nearly allied to *T.* is *Petasites*, of which one species, the **BUTTER BUR** (*P. vulgaris*, formerly

TUSSLE-TUSSOCK.

Tussilago Petasites), is a native of Britain. The leaves resemble those of *T. Farfara*, but are much larger; the flowers also appear before the leaves, but in a dense thyrusus, and are of a pale flesh-color. The flowers of both are much sought by bees, as are those of *Petasites* (formerly *Tussilago*) *alba* and *P.* (formerly *T.*) *fragrans*, natives of s. Europe.



Colt's-foot (*Tussilago Farfara*).

TUSSLE, n., or **TUSTLE**, n. *tŭs'sl* [another form of *tousle*, to pull about roughly (see **TOUSE**)]: a struggle or struggling; a petty hand to hand conflict between two persons; a scuffle: V. to struggle hand to hand. **TUS'SLING**, imp. **TUSSLED**, pp. *tŭs'sld*.

TUSSOCK, n. *tŭs'sŏk* [W. *dās*, a heap, a mow: Gael. *dos*, a bush, a cluster: F. *tas*, a heap: Dan. *dusk*, a bunch, a tassel]: a clump or tuft of grass or twigs; a tall strong grass, originally from the Falkland Islands; also called **TUSSAC-GRASS** (q. v.). **TUS'SOCKY**, a. -ŭ, covered with or resembling tufts. **TUSSOCK-MOTH**, grayish-white moth (*Larŭa pudibunda*), about an inch long, the upper wings freckled, with four irregular darkish lines, the under wings nearly white. The caterpillar, which is covered with tufts of hair, does great mischief in hop plantations, and is known in Great Britain by the name *Hop-dog*. In the United States, the Hickory Tussock caterpillar (found often on elm and ash) has white and black tufts, with two long black pencils of hair on the fourth and tenth rings; the moth (*Halesidota Caryæ*) has long ochreous fore-wings with 3 rows of semi-transparent dots. Among other species is the Checkered Tussock-moth (*Lophocampa tessellaris*), the fore-wings with 5 bands of spots; and the caterpillar, found on the button-wood, with light-yellow tufts and orange-colored pencils.

TUSSUR—TUTTY.

TUSSUR, n. *tūs'sēr* [Skr. *tasar*, a shuttle]: an inferior sort of silk, the produce of a worm found wild in many parts of India: more correctly **TASAR**.

TUSTLE, n. *tūs'sl*: see **TUSSE**.

TUT, int. *tūt* [another form of *tush*: prov. Dan. *trutte*, to stick out the lips: Sw. *trut*, a snout]: an exclamation of impatience intended to check or rebuke.

TUTELAGE, n. *tūt'tē-lāj* [L. *tutelā*, protection—from *tutor*, a protector—from *tuċor*, I preserve: It. *tutela*; F. *tutelle*, guardianship]: state of being under a guardian; protection; guardianship. **TUTELAR**, a. *tūt'tē-lēr*, or **TU'TELARY**, a. *-lēr-ĭ*, having the charge or guardianship of (a person, a place, or a thing); protecting; guardian.

TUTENAG, or **TUTENAGUE**, n. *tūt'tē-näg* [F. *toutenague*: a Pers. word]: Chinese copper, an alloyed metal of eight parts of copper, three of nickel, and six and a half of zinc; in *India*, zinc or spelter.

TUTOR, n. *tūt'tēr* [F. *tuteur*—from L. *tutor* or *tutōrem*, a watcher, a defender—from *tuċor*, I look at, I guard: It. *tutore*]: a guardian; one who has the care of a minor; one who has the care of the education of another; a private instructor; in *law*, a guardian of the person as well as of the estate of a boy under 14, or a girl under 12 (see **GUARDIAN**). At common law, a father is both tutor and curator of his children; in *universities* and *colleges*, one who superintends the studies of students or undergraduates: V. to teach; to instruct; to correct. **TU'TORING**, imp.: N. the act of instructing; education. **TU'TORED**, pp. *-tērd*. **TU'TORESS**, n. *-ēs*, a woman who instructs privately. **TU'TORSHIP**, n. *-shĭp*, the office of tutor. **TU'TORAGE**, n. *-tēr-āj*, education, as by a tutor; guardianship. **TU'TORISM**, n. *-ĭzm*, tutorship. **TUTORIAL**, a. *tūt-tō'rĭ-āl*, pertaining to a tutor or instructor; exercised by a tutor. **TUTO'RIALLY**, ad. *-lĭ*.

TUTSAN, n. *tūt'sān* [F. *toute-saine*, lit., all-heal—from L. *totus*, whole; *sanus*, healthy]: a shrubby species of St. John's wort, *Hypericum Androsæmum*, ord. *Hypericacææ*.

TUTTI, n. plu. *tūt'tĭ* [It. —from L. *totus*, the whole]: in *music*, all; a direction to performers for all to play or sing in full concert. **TUTTA ARCO**, whole length of the bow. **TUTTA FORZA**, full power or force.

TUTTLINGEN, *tūt'ling-én*: town of Würtemberg; right bank of the Danube; 20 m. w.s.w. of Sigmaringen. It manufactures shoes, surgical instruments (largest establishment in Germany), knives, needles, cloth, cotton, hosiery, linen, and silk; also has some trade in grain. T. is historically notable as the scene of a battle 1643, during the Thirty Years' War, in which an Austro-Bavarian force, under Hatzfeld and Mercy, defeated the French.—Pop. (1880) 8,022; (1890) 10,092.

TUTTY, n. *tūt'tĭ* [F. *tutie*; Port. *tutia*; It. *tuzia*—from Ar. *toutiyā*]: impure protoxide of zinc collected from the chimneys of smelting-furnaces; as a powder it is of some value in medicine.

TUTUILA—TVER.

TUTUILA, *tú-tú-ě'la*: island in the Pacific, belonging to the Navigators' or Samoan group (see SAMOA); about 17 m. long and 5 m. broad. The coast is bold, and the island is traversed by sharp-peaked, highly picturesque mountains, 2,500 to 3,500 ft. high. The harbor of Pago Pago, an ancient crater, is very deep, and completely landlocked by lofty mountains. In 1872 the chief of this part of T. ceded to the United States the use of this harbor as a naval and coaling station. This cession was confirmed, by treaty, 1878; the United States came into possession of T. in 1900. The mountains are clothed with dense green forests. Between the months of Nov. and May, fearful hurricanes break over the island, and so powerful is their effect that they are said by the natives to *skin the land*. See SAMOA: APIA.

TUWHIT, n. *tū-hwoit'*, or **TUWHOO**, n. *tū-hwoó'*: a word imitative of the cry of the owl.

TUYERE, n. *tó-yār'* or *twē'ār* [F. *tuyère*, opening of a furnace; *tuyau*, a pipe, a tube: OHG. *tuda*, a tube]: *formerly*, the point or nozzle of the blast-pipe that enters the side of a smelting-furnace and through which the air is forced; also the aperture in the side where the nozzle enters; a name now applied to the blast-pipe, of which there may be two or five.

TVER, *twěr*: govt. of Great Russia, bounded n.w. by the govt. of Novgorod, s.e. by the govts. of Moscow and Smolensk; 25,080 sq. m. In configuration, T. is an elevated tableland, forming part of the Valdai plateau, which throws off rivers running n.w. into the Baltic and s.e. into the Caspian Sea. The chief rivers are the Volga, with its affluents, the Tvertza and the Mologa; the Western Dwina, the Msta, and the Tsna. Most of these rivers rise in the n.w., where are numerous lakes. The climate is somewhat severe; the soil is not fertile—marsh prevailing, also woods and tracts of peat, little used as yet. Rye and oats are the only cereals produced with success. Agriculture is the chief employment; but other industries are gradually developing, and 50,000 men are employed in the lake-fisheries and in the carrying trade.—Pop. (1897) 1,812,825.

TVER: city of Great Russia, cap. of the govt. of same name; at the confluence of the Volga and Tvertza; 348 m. s.e. of St. Petersburg, by the St. Petersburg and Moscow railway. At this point the Volga becomes navigable for steamers, though when the water is low there is much difficulty in making the voyage hence to Nijni-Novgorod (q.v.). Among the important buildings of T. are 2 monasteries, 23 churches, and 47 factories of different kinds, of which the chief is the cotton-mill of Kaoulin and Zologin, employing 1,500 persons. Nail-making is an important industry; and linen, leather, and paper are largely manufactured. T. is well situated for an entrepôt, as the St. Petersburg and Moscow railway here meets the Volga, the principal commercial artery of interior Russia; its commercial prosperity is increasing. Cereals and iron from Siberia are chief articles of commerce.—Pop. (1897) 50,060.

TWADDLE—TWEED.

TWADDLE, v. *twōd'dl*, or **TWATTLE**, v. *twōt'tl* [Swiss, *watteln*, to dabble in the wet: Icel. *thwætta*; Norw. *twætta*, to jabber, to talk nonsense: Bav. *schwatteln*, to splash, to chatter]: to talk foolishly; to chatter; to talk in a trifling manner: N. foolish or trifling talk; a twaddler. **TWADDLING**, imp. *-dlīng*: N. empty gossip. **TWADDLED**, pp. *twōd'dld*. **TWADDLER**, n. *-dlēr*, one who talks in a silly manner. **TWADDLY**, a. *-dlī*, gossiping; twaddling.

TWADDLE, n. *twōd'dl* [name of its inventor]: a scale used in the chemical trade to denote the strength of various solutions, especially the percentage of acid contained.

TWAIN, a. or n. *twān* [see Two]: two.

TWAIN, MARK: see CLEMENS, SAMUEL LANGHORNE.

TWANG, v. *twǎng* [imitative of a resonant sound: see also TANG 1]: to sound with a quick sharp noise, as a tense string pulled and allowed to spring back suddenly: N. the sound of a tense string pulled and suddenly set free; a nasal tone of voice; a disagreeable resonance in a voice from speaking through the nose; a disagreeable flavor. **TWANG'ING**, imp.: ADJ. contemptibly noisy. **TWANGED**, pp. *twǎngd*. **TWANGLE**, v. *twǎng'gl*, in *OE.*, to twang. **TWANK**, v. n. *twǎngk*, same as *twang*.

'TWAS, *twōz*: a contracted form of *it was*.

TWATTLE, v. *twōt'tl*: same as TWADDLE (q.v.).

TWAY-BLADE, n. *twā'blād*: a kind of orchis with two large leaves; *Listera ovata*, ord. *Orchidacēæ*.

TWEAK, v. *twēk* [a form of TWITCH (q.v.)]: to pinch or pull with a sudden jerk and twist, as the nose: N. a sharp pinch or jerk. **TWEAK'ING**, imp. **TWEAKED**, pp. *twēkt*.

TWEED, *twēd*: famous Scottish river, rising in s. Peeblesshire, 1,500 ft. above sea-level; flowing n.e. to Peebles, thence e.-by-s. to its junction with the Ettrick, and thence e. and finally n.e. to the North Sea at Berwick-on-Tweed. The river drains great part of Peeblesshire, traverses the n. districts of Selkirk and Roxburgh shires, and forms in its lower course the boundary between Berwickshire on the n.w. and the English border-land on the s.e. It receives the Ettrick, the Teviot, and the Till from the s.; and the Gala, Leader, and Adder from the n. The T. passes Peebles, Innerleithen, Melrose, Dryburgh Abbey, Kelso, Coldstream, and Berwick, a course of 96 m. (the last 2 m. in England), draining an area estimated at 1,870 sq. m. The T. is tidal as far as Norham Castle, 10 m. from its mouth; but there is little or no navigation above Berwick. The region through which the river flows is singularly picturesque and beautiful, especially in its middle and lower course. Possibly the T. owes its fame more to its historic associations than to the charms of the scenery through which it flows. Traversing the heart of the 'Borders,' it has witnessed many a foray between the warrior-farmers north and south, as well as many a deadly struggle between the rival houses of s. Scotland; and its name is frequent in ballad and story. The T. is famous as a salmon and trout stream.

TWEED.

TWEED, kind of woolen cloth largely made at Galashiels, Hawick, Selkirk, and other places in s. Scotland; hence called *Scotch T.*, to distinguish it from similar fabrics made elsewhere. This kind of cloth was at first known as *twel* (twill), so called from being woven diagonally; but owing to an accidental misreading of an invoice, *twel* was superseded by the popular and appropriate name *tweed*. It is of open, soft, flexible texture; differing from English superfine cloth in being less finely spun and less closely woven, but chiefly in not being so thoroughly felted. The manufacture of T. is of comparatively recent date. At the beginning of the 19th c., the weavers of Galashiels, then a mere village, produced, as they had done for more than 200 years, a kind of coarse woolen cloth known as 'Galashiels grays,' made from wool grown on the surrounding hills. Between 1820 and 30 a beginning was made in the manufacture of woolen cloth of the 'shepherd's check' pattern, which fabric, partly through the patronage of Sir Walter Scott and many of his contemporaries, at once became popular under its new name of T. The warmth, comfort, and durability of tweeds, and their suitability for all seasons, gradually led to their being preferred to the hard tartans, Manchester linens, and nankeens of former days, and eventually even to doeskins. The demand rapidly increased, and Galashiels, with 600 inhabitants in 1778, had over 15,000 in 1881. Hawick, Selkirk, and other neighboring places have shared in this prosperity in corresponding degree. Nor has the manufacture confined itself to Tweedside: it has spread n. to Aberdeen, Elgin, and Inverness; s. to Dumfries and into Cumberland; and w. to Stirlingshire and Ayrshire, and even to the Hebrides. The wools used in s. Scotland are chiefly those imported from Australia and the Cape of Good Hope; in other districts, Cheviot, Danish, and other wools also are used. The manufacture of T. is now one of the chief staples of Scotland, its success being due in great measure to the sound quality of the raw material used, as well as to the good taste and practical knowledge of the makers. In 1862 the total annual value of the tweeds made in Scotland was estimated at about \$8,000,000. In 1881 it was estimated that the manufactories were capable of turning out tweeds to the annual value of about \$27,000,000. About half this sum would represent the value of the wool used.

TWEED, WILLIAM MARCY: politician: 1823, Apr. 3—1878, Apr. 12; b. New York. He learned the trade of chair-making, and worked at it a few years. Having organized the Americus Fire Co. (in the old volunteer fire dept. of the city), of which he was chosen foreman, he acquired great popularity and had much influence in local politics. He was elected a New York alderman 1852, representative in congress 1853, chairman of the board of supervisors 1856, school commissioner 1856-7, deputy street commissioner 1861-70, state senator 1867. He became commissioner of public works 1870, and while in that office organized the 'ring' or combination of municipal officials famed as the Tweed Ring. The city

TWEEDLE--TWELVE APOSTLES.

treasury was defrauded of many millions of dollars by means of fraudulent vouchers, double and triple payments for the same work, and by similar practices. The guilt of T. and his associates was proved by documentary evidence secured by the *New York Times*. He was held in \$1,000,000 bail in a civil suit brought on behalf of the city 1871, Oct., and was arrested on charge of criminal fraud Dec. He was found guilty on the criminal charge 1873, Nov., and was sentenced to 12 years' imprisonment. Judgment was rendered in the civil suit 1875, Apr., for \$6,000,000 with interest. T. escaped from prison 1875 Dec., and fled to Spain, but was extradited. He died a prisoner.

TWEEDLE, v. *twē'dl* [a form of **TWIDDLE**]: to touch or handle lightly; to twiddle; to wheedle. **TWEE'DLING**, imp. **TWEE'DLED**, pp.

TWEEDLEDUM AND TWEEDLEDEE, *twē'dl-dŭm, twē'dl-dē*: a familiar phrase, denoting a distinction without a difference; an attempt to distinguish between things or parts where no difference exists; hair-splitting nonsense.

TWEED'MOUTH: see **BERWICK-ON-TWEED**.

TWEEL, v. n. *twēl*: same as **TWILL** (q.v.). **TWEEL'ING**, imp. **TWEELED**, pp. *twēld*.

'TWEEN: a contr. of *between*.

TWEER, n. *twē'ér*: another spelling of **TUYERE**.

TWEESE, or **TWEEZE**, n. *twēz* [see *note* under **TWEEZERS**]: a case of surgical instruments.

TWEEZERS, n. plu. *twē'zērz* [from the numeral *two*: Swiss, *zwisser*, a forked twig: Swab. *zwisele*, a forked stem]: an instr. consisting of two pointed branches for taking hold of small objects; small nippers or pincers used for plucking out hairs. *Note*.—According to another etymology, *tweezer* is properly an instr. contained in a *tweese* or case of instruments; *tweeze* is a corruption of OF. *estuy*; F. *étui*, a case for instruments, the same word as Sp. *estuche*, a scissors-case, Port. *estojo*, a tweezer-case.

TWELFTH-DAY: see **BEAN-KING'S FESTIVAL**: **EPIPHANY**.

TWELVE, n. a. *twēlv* [AS. *twelf*, twelve: Goth. *twalif*, twelve—from *twai*, two; *laibos*, relics: Lith. *dwilika*, twelve—from *dwi*, two; *likti*, to remain over: the idea being the second excess above ten—see *note* under **ELEVEN**]: the first number after eleven; the sum of two and ten; a dozen. **TWELFTH**, a. *twēlfth*, the ordinal of twelve; next in order after the eleventh: N. one part of twelve; in *music*, an interval of an octave and a fifth. **TWELVEMONTH**, n. a year. **TWELVEMO** or **TWELVES**: see under **PAPER**. **TWELFTH-CAKE**, a sweet ornamental cake given to friends or visitors on Twelfth-night, 6th January. **TWELFTH-DAY**, or **-TIDE**, the twelfth day after Christmas; the festival of the Epiphany (q.v.), or manifestation of Christ to the Gentiles (see **BEAN-KING'S FESTIVAL**). **TWELVEPENCE**, n. *-pēns*, a shilling.

TWELVE APOSTLES, TEACHING OF THE: see **TEACHING OF THE TWELVE APOSTLES**.

TWELVE TABLES—TWENTY.

TWELVE TABLES (L. *Lex* or *Leges Duodecim Tabularum*): the earliest code of Roman law; so called because cut on 12 bronze tablets. According to the ancient account, the code originated B.C. 462, in the proposal of a tribune, C. Terentilius Arsa, for the appointment of five men to draw up a set of laws to limit the *Imperium* (q.v.), of the consuls. After several years of resistance and delay, the senate dispatched, B.C. 454, three commissioners to Greece and the Greek colonies in s. Italy, to report on the laws in force there. After two years they returned; and ten men (*decemviri*) were appointed, with consular power, and under the presidency of Appius Claudius (q.v.), to draw up a code (*legibus scribundis*). In B.C. 451 the code was finished, was passed into law by the Comitia (q.v.) of the centuries, engraved on ten tables of wood, and set up in the Forum. In the following year, the decemvirate having been reappointed, two other tables of supplementary matter were added: see **DECEMVIR**. Some provisions of the T. T. correspond to laws observed in Greece, and several are almost literal renderings of parts of the laws of Solon (q.v.). This has led some to regard the T. T. as an eclectic assortment of foreign laws; but modern investigators are now agreed that they are in the main native and original, and express the first effort in the way of codifying the consuetudinary laws of the Latin race.

According to Livy (iii. 57) and Diodorus (xii. 56), the laws of the T. T. were cut on bronze tablets and put up in a public place. Whether these tablets were destroyed by the Gauls when they sacked and burned Rome B.C. 390 is uncertain. But the later Romans entertained no doubt that the collection which existed in their time was genuine; and Cicero tells us that in his youth school-children were required to commit them to memory. The only portions extant are those which have been quoted by jurists and others. The T. T. are described by Livy (iii. 34) as the *fons publici privatique juris*—the fountain of public and private law; and Cicero (*De Or.*, I. 43, 44) speaks of them with high praise. In the course of years, the *Jus Publicum*, as could not fail to be the case, was greatly changed; but the *Jus Privatum* of the T. T. continued to be the fundamental law of the Roman state. See article 'Lex,' in Smith's *Dic. of Gr. and Rom. Ant.*; Niebuhr's *Lect. Rom. Hist.* (Eng. transl., I. 295–319); Mommsen's *Hist. of Rome*; and the relevant portions of Ihne's and Duruy's histories. The work of Dirksen (*Uebersicht der bisherigen Versuche*, etc.) on the subject and his ed. of the fragments (1824) deserve notice; also the edition by Schöll (1866), and that by Bruns in *Fontes Juris Romani* (3d ed. 1876).

TWENTY, n. a. *twēn'tī* [Ger. *zwanzig*; Icel. *tuttugu*, twenty; Goth. *twaitigjus*, twenty—from *twai*, two; *tigjus*, the sum or number of ten: AS. *twentig*, twenty (see **EIGHTY**, under **EIGHT**)]: one more than nineteen; a score; a proverbial or an indefinite number. **TWEN'TIETH**, a. *-ēth*, the ordinal of twenty: N. one of twenty equal parts. **TWENTY-FOLD**, a. twenty times as many or as much. **TWENTY-FOURMO**, or **TWENTY-FOURS**: see under **PAPER**.

TWIBILL—TWILIGHT.

TWIBILL, or **TWYBILL**, n. *twī'bīl* [from *two*, and *bill* 1]: in *prov.* and *OE.*, a two-edged bill or mattock.

TWICE, ad. *twīs* [*OE. twies*—from *two*: *AS. twiwa*, twice]: two times; once and again; doubly.

TWICKENHAM, *twīk'ēn-am*: town in Middlesex co., England; on the n. bank of the Thames, and on the London and Southwestern railway; $11\frac{1}{4}$ m. s.w. of London. It is opposite Richmond, and connected with it by a stone bridge. It contains a free library, a museum, a school for the daughters of naval and marine officers, and several charitable institutions. **T.** is noted for the beauty of its suburban residences and for its famous old historical buildings, among which are Strawberry Hill, the residence of Horace Walpole, and York House, the residence of James II. when Duke of York. It was the home of Pope, who is buried here.—Pop. (1881) 12,479; (1891) 16,026.

TWIDDLE, v. *twīd'dl* [a word imitative of a quivering motion]: to touch lightly; to play with a tremulous quivering motion; to twirl: **N.** a twist of the fingers. **TWIDDLING**, imp. *-dlīng*. **TWIDDLED**, pp. *twīd'dld*.

TWIFOLD, or **TWYFOLD**: *OE.* for **TWOFOLD**.

TWIG, n. *twīg* [Low Ger. *twieg*; Ger. *zweig*, a twig—from *zwei*, two: Dan. *tvege*, a forked branch]: a small shoot or branch of a tree or bush. **TWIG'GY**, a. *-gī*, full of twigs; abounding with shoots. **TWIG'GEN**, a. *-gēn*, made of, or cased in, twigs.

TWIG, v. *twīg* [Gael. *tuig*, to understand, to discern]: in *old* and *familiar Eng.*, to understand, as a person's motives and meaning; to comprehend; to watch; to observe; to notice. **TWIG'GING**, imp. **TWIGGED**, pp. *twīgd*.

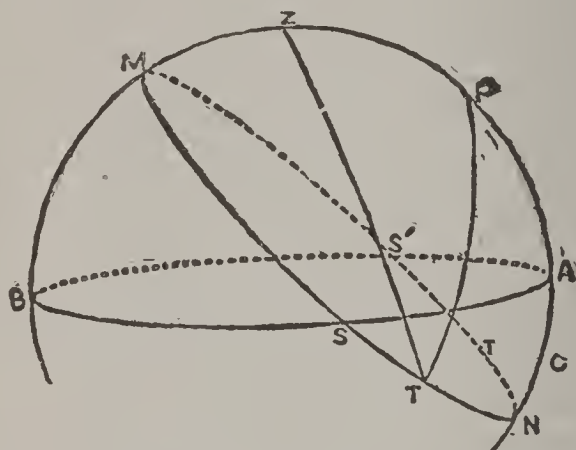
TWIGGS, *twīgz*, **DAVID EMANUEL**: soldier: 1790–1862, Sep. 15; b. Richmond co., Ga. He served in the war of 1812; he had attained the rank of brig.gen. in the U. S. army 1846; won high distinction at the battles of Palo Alto and Resaca de la Palma in the Mexican war, in both of which actions he commanded the right wing; for gallantry at Monterey he was brevetted maj.gen. 1848, and presented by congress with a sword. He adhered to the southern Confederacy in the civil war, at the outbreak of which he surrendered to the state of Texas Federal war material and troops that were under his command. He was appointed maj.gen. in the Confederate army 1861, May, but resigned before the end of the year.

TWILIGHT, n. *twī'lit* [*AS. tweon-leoht*, twilight—from *tweon*, doubt, hovering between two things—from *twi*, double; *leoht*, light (see **LIGHT**)]: the faint light perceived before sunrise and after sunset; uncertain view; obscure light: **ADJ.** faint; obscure; deeply shaded; imperfectly illuminated.

TWILIGHT: light from the sky which is perceived during the transition from night to day (usually called 'dawn'), but specifically from day to night, the length of the transition period varying with the latitude of the place and the declination of the sun. If the earth had no

TWILIGHT.

atmosphere, we should be in total darkness from the instant of sunset until the instant of sunrise. T. is simply sunlight reflected by the air and the clouds and dust and vapors suspended in it, the sun being not more than 18° below the horizon. The question of the duration of T. is, therefore, simply reduced to this: How long after sunset does the sun reach a position 18° below the horizon of a given place? And this can be answered by calculation in spherical trigonometry. Thus, if Z be the zenith, P the



pole of the heavens, ASB the horizon, and MSTN the (small) circle which the sun describes about the pole, there is twilight while the sun moves from T to S, ZT being an arc of 108° . In the spherical triangle ZPT, we know the three sides, for ZP is the co-latitude (or complement of the latitude, or the difference between the latitude expressed in degrees, and 90°) of the place, PT the sun's polar distance, and ZT is 108° . Hence we can calculate the angle ZPT, which is the sun's *hour-angle*; and from this we find how long before or after noon the sun passes the point T. If ZT' be also 108° , we see that it is night while the sun moves from T' to T, day while it moves from S (through M, its meridian position) to S', morning twilight or 'dawn' from T to S, and evening twilight from S' to T'. Make $ZC = 108^\circ$, then, if PN be less than PC, but greater than PA, there will be no point of the sun's path (MS'NS) so far as 108° from Z; therefore the points T and T' will not exist. In this case the sun will set and rise, but there will be *no night*, or, rather, twilight will occupy the whole interval from sunset to sunrise. This cannot occur in low latitudes, but does occur during certain periods of the year in extreme n. and s. countries. For

PN is $90^\circ - \text{sun's declination}$,

PC is latitude $+ 18^\circ$,

and our condition is, therefore, that $90^\circ - \text{sun's declination}$, while greater than the latitude, does not exceed it by more than 18° . Or, in a simpler form, the latitude, together with the sun's declination, must lie between 90° and 72° . Now, the sun's greatest declination is about $23^\circ 30'$; therefore, in lat. $48^\circ 30'$ ($72^\circ - 23^\circ 30'$) there will be one night in the year (at the summer solstice) consisting wholly of twilight; for higher latitudes, more; and for lower, none.

TWILL—TWINGE.

Some curious problems on this subject, such as the finding the time of year at which the twilight is longest in a given latitude, were among the early triumphs of the differential calculus.—A curious phenomenon, the *afterglow*, or second twilight, often seen in the Nubian desert, is referred by Sir John Herschel to a *second* reflection of solar light in the atmosphere. Lambert and others had previously speculated on the possibility of second and even third twilights, but in their time there was no record of such appearances.

TWILL, v. *twil*, or **TWEEL**, v. *twēl* [Ger. *zwillich*, ticking: Low Ger. *twillen*, to make double—from the root of *two*, which see]: to weave cloth so as to produce the appearance of diagonal lines or ribs on its surface: N. cloth having a kind of diagonal ribbed appearance on the surface, produced in weaving by passing the weft over one and under two or more warp-threads. Twills are called *three-leaf twill*, *six-leaf twill*, etc., according to the number of heddles used. **TWILL'ING**, imp. **TWILLED**, pp. *twild*: **ADJ.** woven in such a manner as to produce the appearance of diagonal ribs on the surface.

TWIN, n. *twīn*, generally used in plural **TWINS**, *twīnz* [Ger. *zwilling*; OHG. *zwinilinc*, twin: Lith. *duyni*, twins: comp. L. *bini*, two at a time—from *bis*, twice]: one of two young produced at a birth by an animal that usually brings forth only one; one very much resembling another: in *mineral*., one of two crystals so joined that by revolving 180° round a common axis one would come into the space occupied by the other (see **TWINNING**): **V.** in *OE.*, to be born at the same birth; to be paired; to bring forth twins: **ADJ.** denoting one of two produced at a birth; very much resembling. **TWINNED**, a. *twīnd*, in *OE.*, born at the same birth; like as twins; paired. **TWIN'LING**, n. *-ling*, a twin lamb. **TWIN-BORN**, produced at the same birth. **TWIN-BROTHER**, a brother being one of two (either both male, or one male and the other female) produced at the same birth. **TWIN-FLOWER**, an elegant little creeping evergreen plant; *Linnæa boreālis*, ord. *Caprifoliacææ*. **TWIN-LIKENESS**, near resemblance. **THE TWINS**, a sign of the zodiac; Gemini.

TWINE, v. *twīn* [Dut. *twijn*; Icel. *twinni*, twine: Icel. *twinna*; Dan. *twinde*, to twine, to double]: to twist; to wind around another, as a thread or cord; to wind or twist anything flexible around something else; to unite closely, as by twisting; to embrace; wreath; coil; wind: N. a strong thread composed of two or three smaller threads twisted together; cord; a twist; an embrace. **TWIN'ING**, imp.: **ADJ.** ascending spirally around a stem, a branch, or a prop; uniting closely to; embracing. **TWINED**, pp. *twīnd*.

TWINGE, v. *twīnj* [a nasalized form of **TWITCH**, which see: Sw. *tvinga*, to restrain: Dut. *dwingen*; Ger. *zwingen*, to constrain]: to affect with a sharp, sudden, passing pain; to pinch; to be affected with sharp sudden pains of short duration: N. a sudden, sharp, passing pain; a pinch; a sudden rebuke, as of conscience. **TWING'ING**, imp.: N. the act of pinching with a sudden twitch; a sharp passing pain. **TWINGED**, pp. *twīnjd*.

TWINK—TWIT.

TWINK, v. n.: see **TWINKLE**.

TWINKLE, v. *twīng'kl*, or **TWINK**, v. *twīngk* [AS. *twincian*, to twinkle, a nasalized form from *twicean*, to twitch, expressive of continued twitching or quivering, hence to twinkle (see **TWITCH**): Swiss, *zwyggen*, to twitter; *zwinken*, to wink, to twinkle]: to flash or sparkle at short intervals; to shine with a tremulous or quivering light; to sparkle; to open and shut the eye by turns: N. a shining with a tremulous or quivering light; a motion of the eye; a wink; the time occupied by a motion of the eye; an instant. **TWIN'KLING**, imp. *-kling*: **ADJ.** shining with a twinkle: N. a scintillation; a flash; a very short time; a moment; an instant. **TWINKLED**, pp. *twīng'kld*.

TWINNING, n. *twīn'ing*: in *mineral.*, a form of irregular crystallization in which two or more crystals or parts of crystals are united, but in reversed positions to one another, into one group or compound crystal, by contact or apposition (as in spinel), by intersection (as in staurolite), by penetration (as in calcite), or by incorporation (as in quartz).

TWIRE, v. *twīr* [Gael. *twir*, to chant, to sing: F. *tirelire*, expressive of the singing of the lark: Bav. *zwiren*, to spy]: in *OE.*, primarily 'to sing,' then 'to peep, to look in furtively;' to chirp; to twitter; to twinkle; to be in a kind of flutter; to leer; to simper. **TWIR'ING**, imp. **TWIRED**, pp. *twīrd*.

TWIRL, v. *twērl* [MHG. *twirel*, that which turns rapidly round: Dut. *dwarlen*, to whirl: Swiss, *zwirlen*, to twirl: Bav. *zwoeren*, to stir; *zwirel*, a stirrer]: to turn round rapidly; to whirl; to cause to rotate with rapidity, particularly with the fingers; to twist: N. a rapid circular motion; quick rotation; twist. **TWIRL'ING**, imp.: N. act of that which twirls; a rapid circular motion. **TWIRLED**, pp. *twērl'd*.

TWIST, v. *twīst* [AS. *twi*, double: Dut. *twisten*, to double or unite two threads, to quarrel: Dut. *twist*; Ger. *zweist*, a twist, discord, quarrel]: to unite by winding one thread or other flexible substance round another; to form by winding separate things round each other; to encircle; to turn from a straight line; to contort; to be united by winding round each other; to pervert: N. manner of twisting; a cord, thread, or the like, formed by winding separate parts round each other; a contortion; silk in hanks, balls, or reels, for sewing; a kind of tobacco manufactured in twist form; a bending from a straight line; an obliquity or peculiarity in intellect or disposition. **TWIST'ING**, imp.: **ADJ.** forming convolutions; becoming contorted: N. convolution; contortion. **TWIST'INGLY**, ad. **TWIST'ED**, pp.: **ADJ.** formed by winding threads or strands round each other. **TWIST'ER**, n. one who or that which twists; a rope or twine maker.

TWIT, v. *twīt* [AS. *ætwithan*, to reproach—from *æt*, at; *witan*, to blame: Icel. *vita*, to reprove, to fine]: to vex or annoy by bringing to remembrance a fault, imperfection, or the like; to upbraid; to taunt. **TWIT'TING**, imp. **TWIT'TED**, pp. **TWIT'TINGLY**, ad. *-lī*, with reproach; upbraidingly. **TWIT'TER**, n. *-tēr*, one who twits.

TWITCH—TWITE.

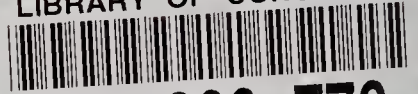
TWITCH, v. *twích* [Ger. *zwicken*, to pluck, to pinch; *zwick*, a pinch: Low Ger. *twikken*, to twitch, to pluck]: to pull with a sudden jerk; to snatch: N. a pull with a sudden jerk; a spasmodic contraction of the muscles, of extremely short duration; a place in a mine where the vein diminishes and almost disappears. **TWITCH'ING**, imp.: ADJ. pulling with a jerk; suffering short spasmodic contractions: N. the act of pulling with a jerk; the act of suffering short spasmodic contractions; a twitch. **TWITCHED**, pp. *twícht*. **TWITCH'ER**, n. *-ér*, one who or that which twitches. **TWITCH-GRASS** [a form of *quitch*—from *quick*, in the sense of living (see **COUCH GRASS**)]: a species of grass difficult to root out and destroy; couch-grass; *Triticum repens*, ord. *Graminææ*.

TWITE, n. *twīt* [imitative of its cry]: the mountain-linnet.

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